FILE HISTORY

US 5,894,506

PATENT:	5,894,506
INVENTORS:	Pinter, Gregory J.
TITLE:	Method and apparatus for generating and communicating messages between subscribers to an electronic messaging network
APPLICATION NO:	US1996708696A
FILED:	05 SEP 1996
ISSUED:	13 APR 1999
COMPILED:	13 JUN 2013

08/708696

379	88.2	
Class	Subclass	ISSUE CLASSIFICATION

5894506

5894506

UTILITY SERIAL NUMBER 08/708696	PATENT DATE APR 13 1999	PATENT NUMBER

SERIAL NUMBER	FILING DATE	CLASS	SUBCLASS	GROUP ART UNIT	EXAMINER
[illegible]	09/05/96	~~379~~ 379	89	~~2601~~ 2742	TSANG

APPLICANTS

[illegible], PINTER, BRANNON, MS.

CONTINUING DATA*******************
VERIFIED

none 7.1

FOREIGN/PCT APPLICATIONS**********
VERIFIED

none 7.1

CERTIFICATE

SEP 14 1999

OF CORRECTION

FOREIGN FILING LICENSE GRANTED 11/01/96

Foreign priority claimed: ☐ yes ☑ no / 35 USC 119 conditions met: ☐ yes ☑ no / Verified and Acknowledged 7.1 Examiner's initials	AS FILED →	STATE OR COUNTRY	SHEETS DRWGS.	TOTAL CLAIMS	INDEP. CLAIMS	FILING FEE RECEIVED	ATTORNEY'S DOCKET NO.
		MS	7	21	4	$850.00	[illegible]

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[illegible] HENDERSON FARABOW GARRETT AND
DUNNER
[illegible] STREET N W
WASHINGTON DC 20005

TITLE

METHOD AND APPARATUS FOR GENERATING AND COMMUNICATING MESSAGES
BETWEEN SUBSCRIBERS [illegible] NETWORK

ISSUE FEE IN FILE

U.S. DEPT. OF COMM./PAT. & TM—PTO-436L (Rev. 12-94)

PARTS OF APPLICATION FILED SEPARATELY		R. Logan Applications Examiner

NOTICE OF ALLOWANCE MAILED		CLAIMS ALLOWED	
9-29-98	Assistant Examiner	Total Claims: 21	Print Claim: 1

ISSUE FEE			DRAWING		
Amount Due	Date Paid	FAN S. TSANG PRIMARY EXAMINER	Sheets Drwg.	Figs. Drwg.	Print Fig.
1320.00	12-23-98	Group 2742 Primary Examiner	7	8	2
			ISSUE BATCH NUMBER	J-63	

Label Area

PREPARED FOR ISSUE

Form PTO-436A
(Rev. 8/92)

(FACE)

5,894,506

METHOD AND APPARATUS FOR GENERATING AND COMMUNICATING MESSAGES BETWEEN SUBSCRIBERS TO AN ELECTRONIC MESSAGING NETWORK

Transaction History

Date	Transaction Description
9/16/1996	Initial Exam Team nn
11/7/1996	Application Captured on Microfilm
4/29/1997	Case Docketed to Examiner in GAU
1/12/1998	Case Docketed to Examiner in GAU
2/19/1998	Non-Final Rejection
2/26/1998	Mail Non-Final Rejection
7/24/1998	Response after Non-Final Action
7/24/1998	Information Disclosure Statement (IDS) Filed
7/24/1998	Information Disclosure Statement (IDS) Filed
7/24/1998	Request for Extension of Time - Granted
7/30/1998	Date Forwarded to Examiner
9/18/1998	Examiner Interview Summary Record (PTOL - 413)
9/29/1998	Mail Notice of Allowance
9/29/1998	Notice of Allowance Data Verification Completed
9/29/1998	Mail Examiner's Amendment
9/29/1998	Examiner's Amendment Communication
12/23/1998	Issue Fee Payment Verified
12/23/1998	Mailroom Date of Drawing(s)
12/29/1998	Drawing(s) Received at Publications
1/14/1999	Drawing(s) Processing Completed
1/14/1999	Drawing(s) Matched to Application
2/18/1999	Workflow - File Sent to Contractor
4/7/1999	Issue Notification Mailed
4/15/1999	Recordation of Patent Grant Mailed
8/16/1999	Post Issue Communication - Certificate of Correction

08/708696

PATENT APPLICATION

08708696

APPROVED FOR LICENSE ☑

INITIALS OCT 02 96 45

CONTENTS

Date Entered or Counted			Date Received or Mailed
	1.	Application 7 pts papers.	
2-19	2.	Key (Bmds)	2-26-98
7-30	3.	Req. Ext. time (2) & Amdt C	7-24-98
	4.	Pris- Art	7-24-98
	5.	Interview Summary	9-18-98
9-28-	6.	FXR Amdt/B	9-29-98
1-14-99	7.	Formal Drawings (7 shts) rec'd N/A PTO GRANT APR 13 1999	12-23-98
	8.		
	9.	Req. for CfC	5-14-99
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STAPLE AREA

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PATENT NUMBER

APPLICATION SERIAL NUMBER
08/708,696

APPLICANT'S NAME (PLEASE PRINT)
Pinter

IF REISSUE, ORIGINAL PATENT NUMBER

INTERNATIONAL CLASSIFICATION
H04M 1/64

ORIGINAL CLASSIFICATION

CLASS	SUBCLASS
379	88.23

CROSS REFERENCE(S)

CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
379	88.15	93.24			
340	825.44				
455	412				

GROUP ART UNIT: 2742

ASSISTANT EXAMINER (PLEASE STAMP OR PRINT FULL NAME)

PRIMARY EXAMINER (PLEASE STAMP OR PRINT FULL NAME)
Fan Tsang

PTO 270 (REV. 5-91)

ISSUE CLASSIFICATION SLIP

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

708696

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POSITION		ID NO.	DATE
CLASSIFIER		10	10/2/96
EXAMINER		414	10-29-96
TYPIST	MH		11-1-96
VERIFIER			
CORPS CORR.			
SPEC. HAND			
FILE MAINT.			
DRAFTING			

INDEX OF CLAIMS

Claim Final	Claim Original	Date 7/8/98	Date 9/16/98
1	(1)	✓	=
2	2		
3	3		
4	4		
5	5		
6	6		
7	7	✓	
8	(8)	=	
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15	(15)	✓	
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SYMBOLS

- ✓ ..... Rejected
- = ... Allowed
- - (Through numberal) Canceled
- + ... Restricted
- N ..... Non-elected
- I ..... Interference
- A ..... Appeal
- O ..... Objected

Claim Final	Claim Original	Date
	51	
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(LEFT INSIDE)

SEARCHED

Class	Sub.	Date	Exmr.
379	67 ~~88~~ ~~89~~	3/15/98	Z.T.
455	31.3 31.2		
395	200.3 200.31 200.34 200.39 200.41		
379	93.24 93.25 93.26		
update	searched	9/17/98	Z.T.

INTERFERENCE SEARCHED

Class	Sub.	Date	Exmr.
379	88.23 88.15 93.24 93.25 93.26	9/17/98	Z.T.

SEARCH NOTES

	Date	Exmr.
W. Cummins (for paging) D. Hunter	9/15/98	Z.T.

(RIGHT OUTSIDE)

US005894506A

United States Patent [19]

Pinter

[11] Patent Number: 5,894,506

[45] Date of Patent: Apr. 13, 1999

[54] **METHOD AND APPARATUS FOR GENERATING AND COMMUNICATING MESSAGES BETWEEN SUBSCRIBERS TO AN ELECTRONIC MESSAGING NETWORK**

[75] Inventor: **Gregory J. Pinter**, Brandon, Miss.

[73] Assignee: **SkyTel Communications, Inc.**, Jackson, Miss.

[21] Appl. No.: **08/708,696**

[22] Filed: **Sep. 5, 1996**

[51] **Int. Cl.**[6] **H04M 1/64**

[52] **U.S. Cl.** **379/88.23**; 379/88.15; 379/93.24; 340/825.44; 455/412

[58] **Field of Search** 379/67, 88, 89, 379/93.24, 93.25, 93.26; 455/31.3, 31.2; 395/200.3, 200.31, 200.34, 200.37, 200.41

[56] **References Cited**

U.S. PATENT DOCUMENTS

2,978,676	4/1961	Spencer	340/154
3,513,443	5/1970	Andersen	340/164
3,714,375	1/1973	Stover	179/2
3,818,145	6/1974	Hanway	179/41
3,846,783	11/1974	Apsell et al.	340/311
3,851,251	11/1974	Wigner et al.	325/55
3,944,724	3/1976	Kilby et al.	178/4.1
3,976,995	8/1976	Sebestyen	340/337
3,984,775	10/1976	Cariel et al.	325/55
4,010,460	3/1977	DeRosa	340/311
4,010,461	3/1977	Stodolski	340/311
4,160,240	7/1979	Parupilo	340/311
4,178,475	12/1979	Taylor et al.	179/2
4,197,526	4/1980	Levine	340/311
4,249,165	2/1981	Mori	340/311
4,263,480	4/1981	Levine	179/2
4,330,780	5/1982	Masaki	340/825.44
4,336,524	6/1982	Levine	340/311
4,382,256	5/1983	Nagata	340/825.44
5,327,486	7/1994	Wolff et al.	379/210
5,381,466	1/1995	Shibayama et al.	379/88
5,539,808	7/1996	Inniss et al.	379/67

OTHER PUBLICATIONS

"New Radio Paging System," by Mitsuru Komura et al. Japan Telecommunications Review, Jul. 1977, vol. 19, No. 3, pp. 217 and 220–225.

"Paging System Broadcasts Nationwide on FM Radio Channel," Electronics International, Jan. 4, 1979, vol. 52, No. 1, pp. 67–68.

"A Development Project of a Pocketsize Receiver for a Nationwide Paging System," by Kari Kiishinen et al. IEEE, 1979, pp. 383–387.

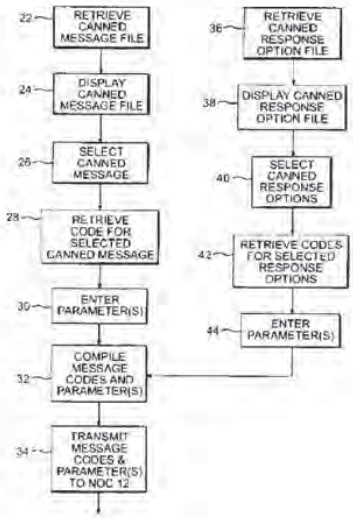
Primary Examiner—Fan S. Tsang

Attorney, Agent, or Firm—Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P.

[57] **ABSTRACT**

An electronic messaging network comprises a network operation center and plural message terminals, all including memories for storing corresponding files of canned messages and associated message codes. To send a canned message, a calling party selects a canned message stored at one message terminal and transmits the assigned message code to a receiving party at another message terminal via the network operation center. The receiving terminal retrieves the selected canned message from its memory using the received message code for display to the receiving party. Files of canned responses and associated response codes may also be stored in the memories at the terminals and network operation center to allow the exchange of selected canned response options in conjunction with canned messages to be in response code form.

21 Claims, 7 Drawing Sheets



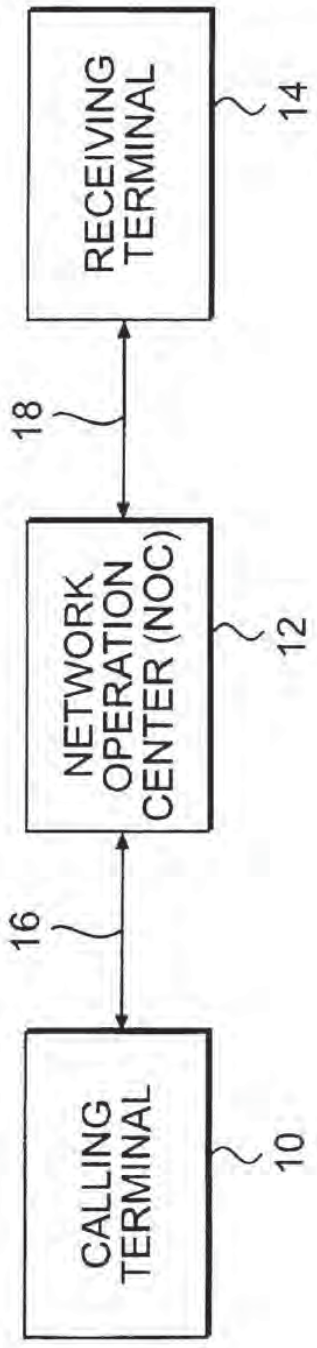

RECEIVING TERMINAL
14
18
NETWORK OPERATION CENTER (NOC)
12
16
CALLING TERMINAL
10

FIG. 1

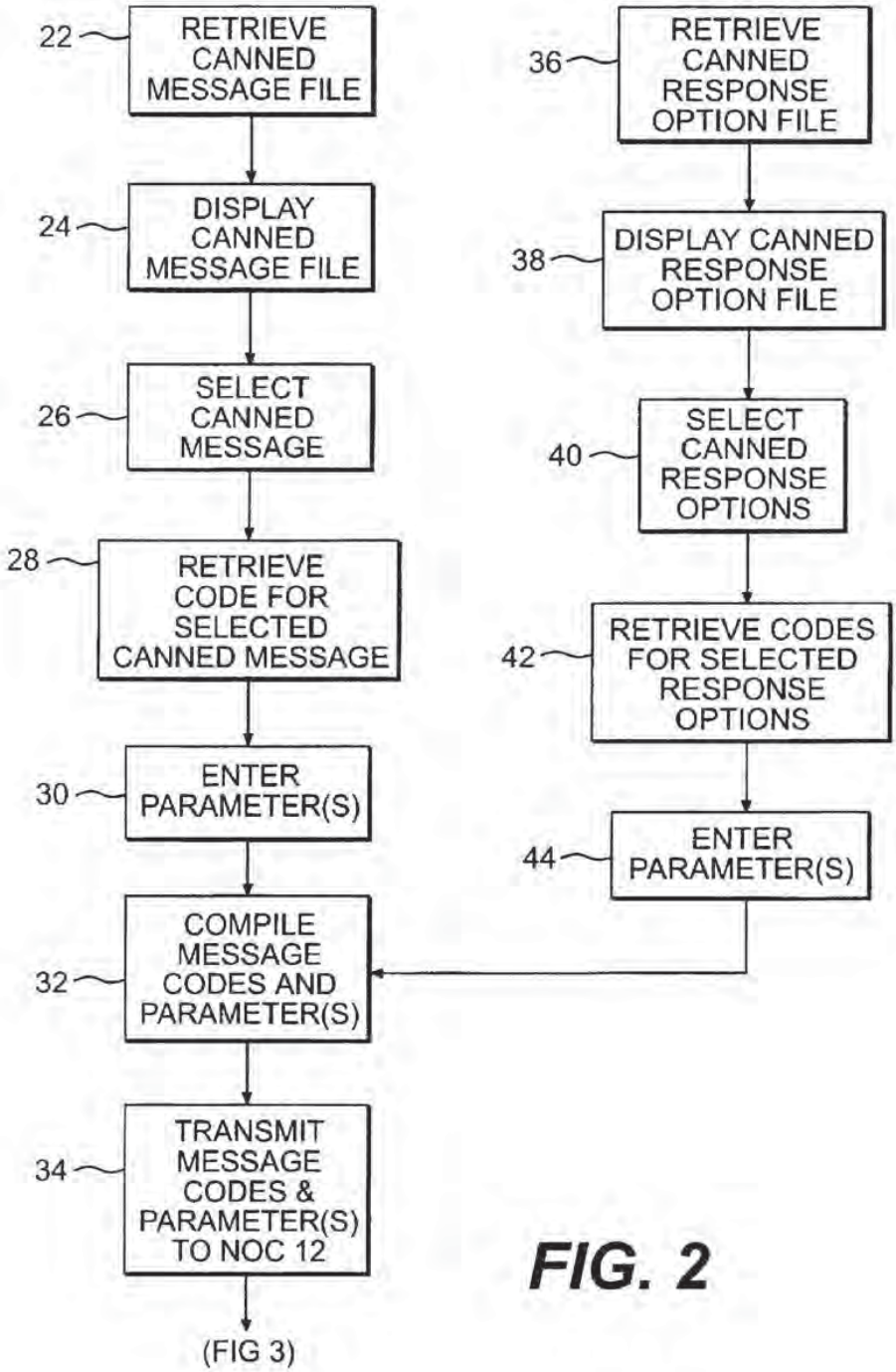

22
RETRIEVE CANNED MESSAGE FILE
24
DISPLAY CANNED MESSAGE FILE
26
SELECT CANNED MESSAGE
28
RETRIEVE CODE FOR SELECTED CANNED MESSAGE
30
ENTER PARAMETER(S)
32
COMPILE MESSAGE CODES AND PARAMETER(S)
34
TRANSMIT MESSAGE CODES & PARAMETER(S) TO NOC 12
(FIG 3)
36
RETRIEVE CANNED RESPONSE OPTION FILE
38
DISPLAY CANNED RESPONSE OPTION FILE
40
SELECT CANNED RESPONSE OPTIONS
42
RETRIEVE CODES FOR SELECTED RESPONSE OPTIONS
44
ENTER PARAMETER(S)

FIG. 2

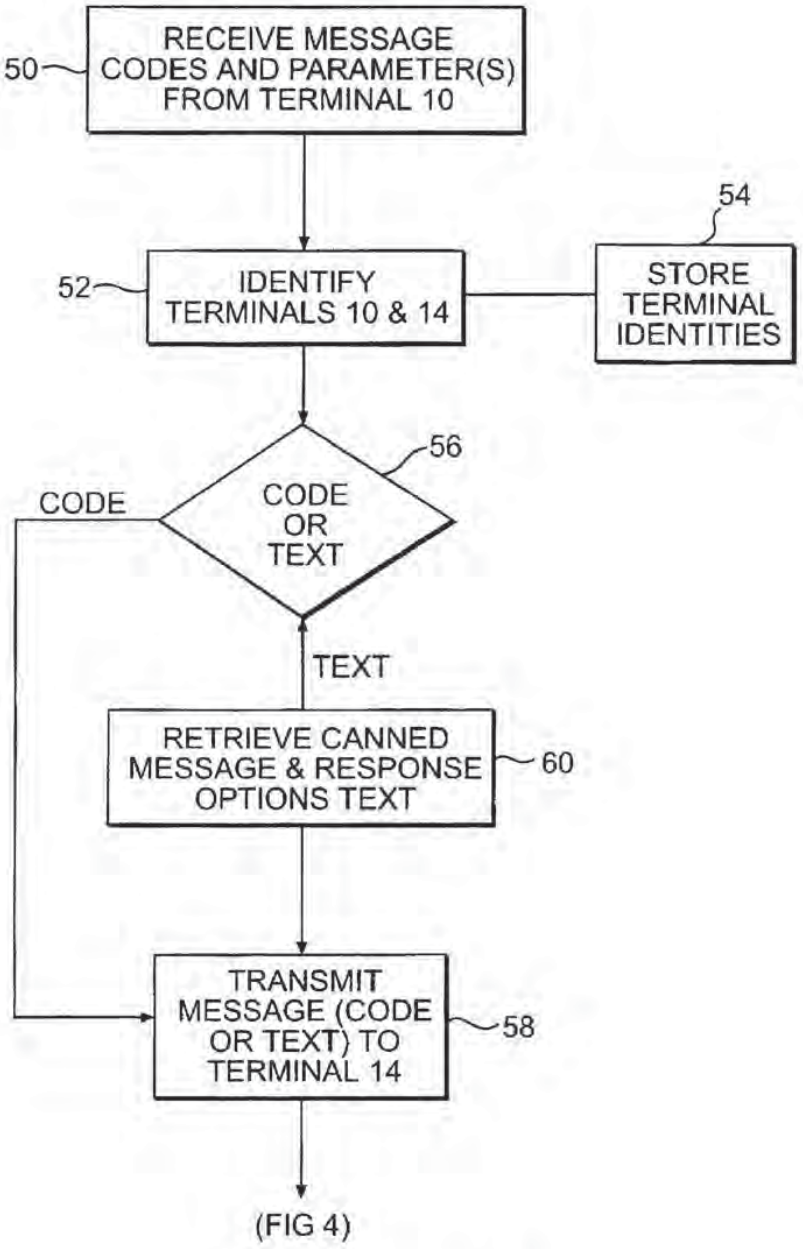

RECEIVE MESSAGE CODES AND PARAMETER(S) FROM TERMINAL 10
50
IDENTIFY TERMINALS 10 & 14
52
STORE TERMINAL IDENTITIES
54
CODE OR TEXT
56
CODE
TEXT
RETRIEVE CANNED MESSAGE & RESPONSE OPTIONS TEXT
60
TRANSMIT MESSAGE (CODE OR TEXT) TO TERMINAL 14
58
(FIG 4)

FIG. 3

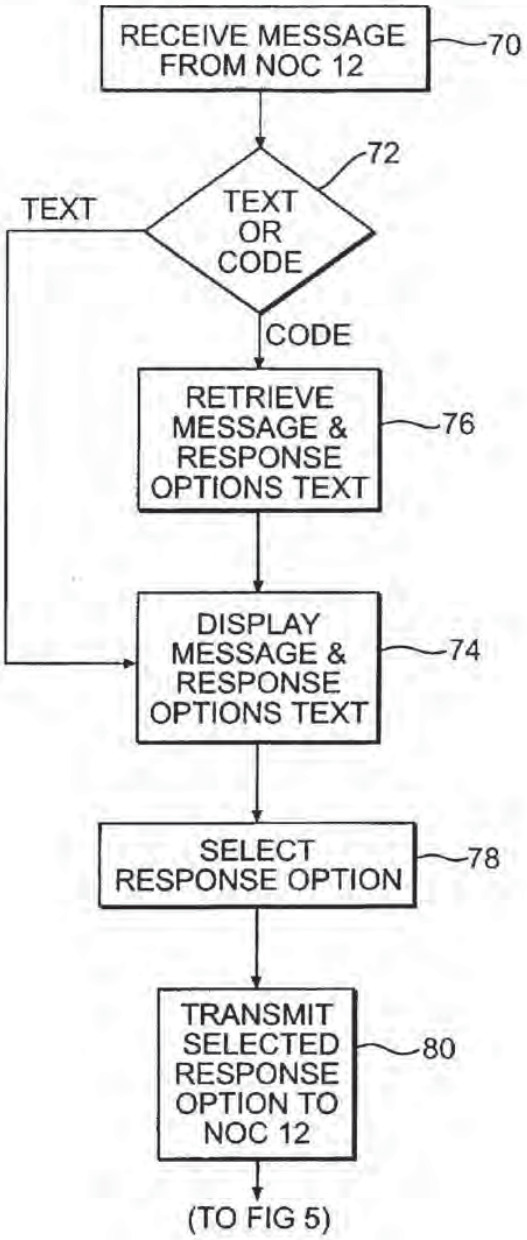

RECEIVE MESSAGE FROM NOC 12
70
72
TEXT OR CODE
TEXT
CODE
RETRIEVE MESSAGE & RESPONSE OPTIONS TEXT
76
DISPLAY MESSAGE & RESPONSE OPTIONS TEXT
74
SELECT RESPONSE OPTION
78
TRANSMIT SELECTED RESPONSE OPTION TO NOC 12
80
(TO FIG 5)

FIG. 4

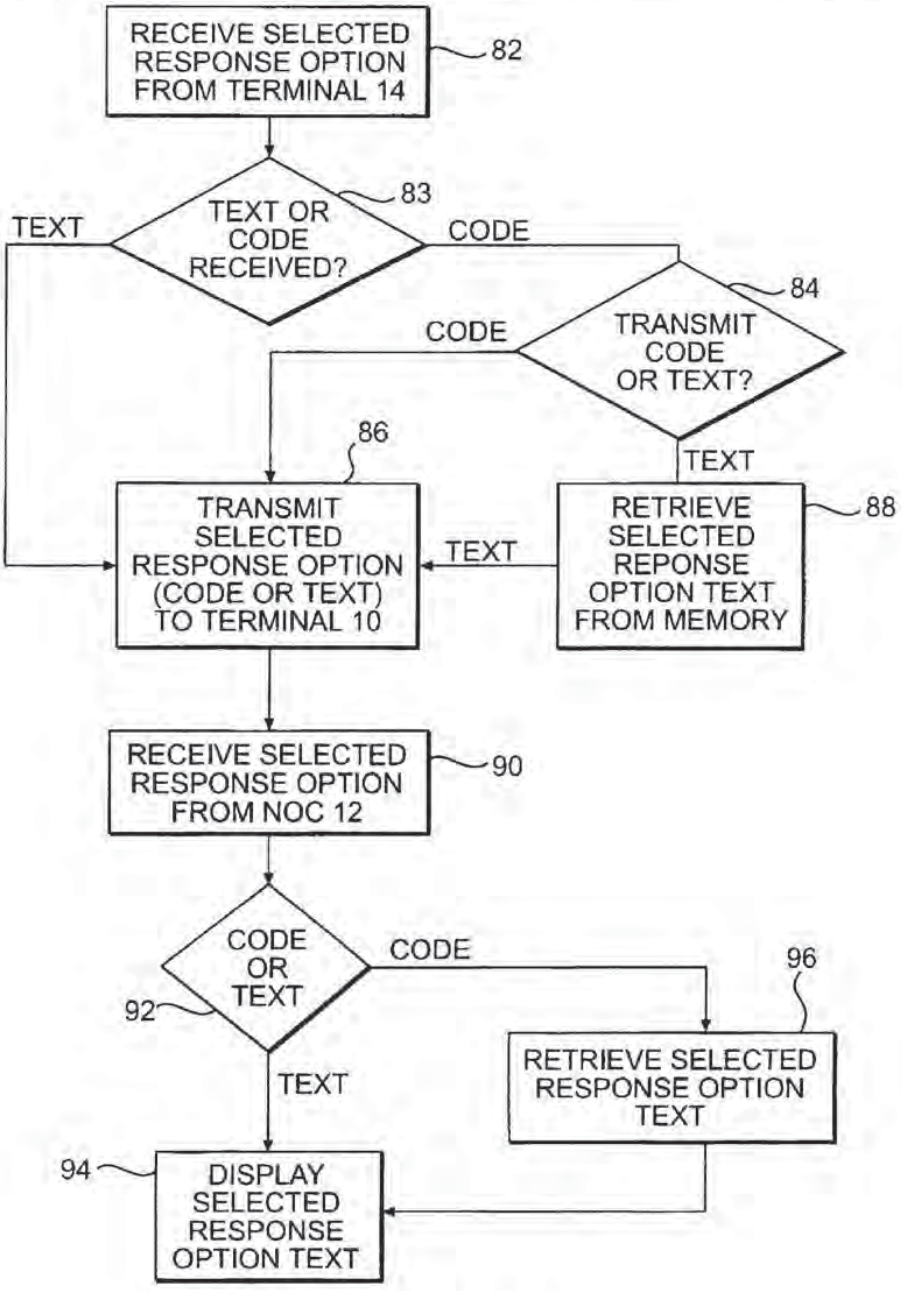

RECEIVE SELECTED RESPONSE OPTION FROM TERMINAL 14
82
TEXT OR CODE RECEIVED?
83
TEXT
CODE
TRANSMIT CODE OR TEXT?
84
CODE
TEXT
TRANSMIT SELECTED RESPONSE OPTION (CODE OR TEXT) TO TERMINAL 10
86
TEXT
RETRIEVE SELECTED REPONSE OPTION TEXT FROM MEMORY
88
RECEIVE SELECTED RESPONSE OPTION FROM NOC 12
90
CODE OR TEXT
92
CODE
96
TEXT
RETRIEVE SELECTED RESPONSE OPTION TEXT
94
DISPLAY SELECTED RESPONSE OPTION TEXT

FIG. 5

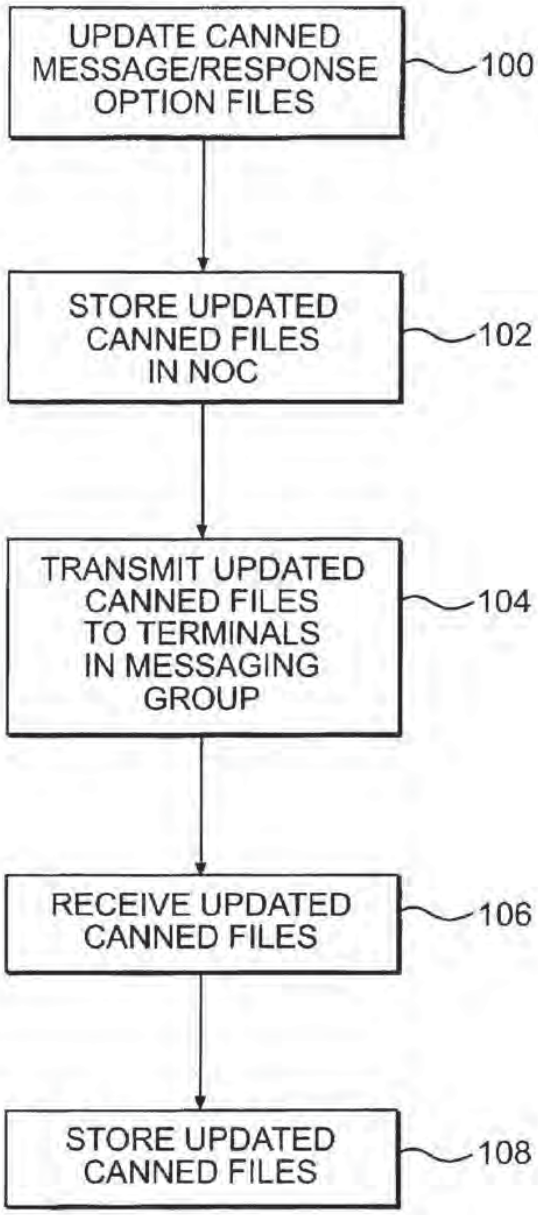

UPDATE CANNED MESSAGE/RESPONSE OPTION FILES
100
STORE UPDATED CANNED FILES IN NOC
102
TRANSMIT UPDATED CANNED FILES TO TERMINALS IN MESSAGING GROUP
104
RECEIVE UPDATED CANNED FILES
106
STORE UPDATED CANNED FILES
108

FIG. 6

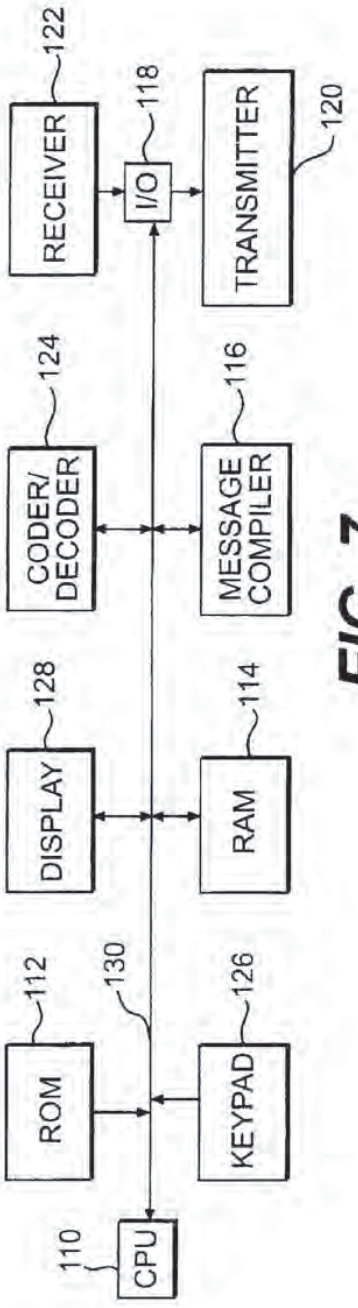

RECEIVER
122
I/O
118
TRANSMITTER
120
CODER/
DECODER
124
MESSAGE
COMPILER
116
DISPLAY
128
RAM
114
ROM
112
130
KEYPAD
126
110
CPU

FIG. 7

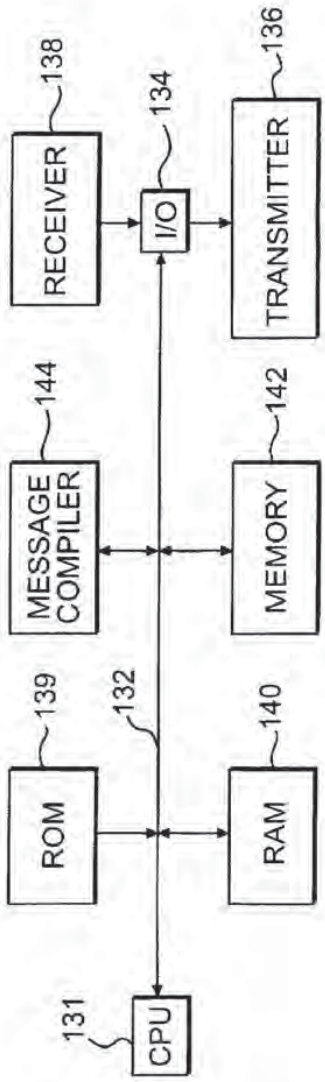

RECEIVER
138
I/O
134
TRANSMITTER
136
MESSAGE
COMPILER
144
MEMORY
142
ROM
139
132
RAM
140
131
CPU

FIG. 8

METHOD AND APPARATUS FOR GENERATING AND COMMUNICATING MESSAGES BETWEEN SUBSCRIBERS TO AN ELECTRONIC MESSAGING NETWORK

FIELD OF THE INVENTION

The present invention relates to electronic information services and more particularly to the exchange of electronic messages among subscribers to an electronic messaging network.

BACKGROUND OF THE INVENTION

As more and more people sign on to information networks, congestion of the communications links comprising these networks, both wireline and wireless, and the consequential transmission delays become increasingly significant problems. Faster transmission rates, data compression techniques, and more efficient spectrum utilization are among the approaches that have been considered, and to some extent implemented, to increase the capacities of communications links.

One area of particularly rapid growth is the electronic messaging field. More and more people are moving about with portable devices, such as laptop computers and portable digital devices, which can be economically equipped to function as message sending/receiving terminals. Moreover, wireless paging hardware, software, and support services are being upgraded to accommodate two-way messaging. That is, portable pagers are being developed not only to receiving paging messages, but also to send back a signal acknowledging receipt of a paging message or even a message answering the received paging message. While such upgraded paging services are highly desirable, they can severely strain the capacity of wireless paging channels.

SUMMARY OF THE INVENTION

It is accordingly a principle object of the present invention to provide an improved electronic messaging network and method, wherein communications link capacity is conserved by transmitting certain messages with an improved degree of message compression.

Particularly in the case of radio paging, many paging messages consists of a relatively small number of common phrases, such as "I am on the way home", "I am working late", "Can we meet for lunch", etc. This being the case, such commonly used phrases can be treated as "canned" messages that can be replaced by short message codes as simple as, for example, one or several ASCII characters.

The present invention takes advantage of this fact by providing, in accordance with one preferred embodiment, a method of communicating messages between subscribers of an electronic messaging network, comprising the steps of maintaining, at a network operation center, a first file of canned messages individually retrievable using unique, abbreviated message codes respectively assigned to the canned messages; maintaining, at a terminal of a calling subscriber, a second file of canned messages corresponding to the first file; selecting an appropriate canned message from the second file for transmission to a terminal of a designated receiving subscriber; sending the message code assigned to the selected canned message to the network operation center; retrieving the selected canned message from the first file using the message code received from the calling subscriber terminal; and communicating the selected canned message to the designated receiving party terminal where it is displayed.

In accordance with a feature of the present invention, the first and second canned message files may be updated, either by the network operation center or from a subscriber terminal in order to customize the canned messages according to the needs of a particular group or organization of subscribers. In addition, the canned messages may be phrased to accept the addition of one or more parameters, which are entered at the calling subscriber terminal and then included with the message codes sent to the network operation center. The selected canned messages are retrieved from the first file using the message codes and communicated to terminals of designated receiving subscribers with the added parameters incorporated in the bodies of the canned messages.

The present invention also accommodates the addition of multiple response options to the canned messages selected by calling subscribers. The multiple response options are then included with the canned message codes sent to the network operation center. The selected canned messages are then retrieved from the first file and communicated to the designated receiving subscribers, together with the added multiple response options. The receiving parties then select the appropriate one of the multiple options for transmission back to the appropriate calling subscribers via the network operation center. The multiple response options may also be canned responses maintained in files at the network operation center and the subscriber terminals and, like the canned messages, have assigned response codes that are handled in the same manner as the message codes.

In accordance with another feature of the present invention, corresponding canned message files are also maintained at receiving subscriber terminals, such that the canned messages may be communicated to the receiving subscribers in message code form. The received message codes are then used to retrieve the appropriate canned messages and multiple response options from stored files, and displayed by the receiving party terminals.

Additional features and advantages of the invention will be set forth in the description which follows, and in part will be apparent from the description, or may be learned by practice of the invention. The objectives and other advantages of the invention may be realized and attained by the method and apparatus particularly pointed out in the written description and the appended claims, as well as the accompanying drawings.

It will be understood that both the foregoing general description and the following detailed description are exemplary and explanatory and are intended to provide further explanation of the invention as claimed.

The accompanying drawings are intended to provide a further understanding of the invention and are incorporated in and constitute a part of the specification, illustrate a preferred embodiment of the invention, and, together with the description, serve to explain the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram illustrating an electronic messaging network utilized in the practice of a preferred embodiment of the present invention;

FIG. 2 is a flow diagram illustrating the operation of a calling terminal in the network of FIG. 1 when sending a message in accordance with one embodiment of the invention;

FIG. 3 is a flow diagram illustrating the operation of the network operation center (NOC) in the network of FIG. 1 when relaying a message from the calling terminal to the receiving terminal in accordance with one embodiment of the invention;

FIG. 4 is a flow diagram illustrating the operation of the receiving terminal in the network of FIG. 1 when receiving a message in accordance with one embodiment of the invention;

FIG. 5 is a flow diagram illustrating the operations of the NOC and the calling terminal regarding a message response from the receiving terminal in accordance with one embodiment of the invention;

FIG. 6 is a flow diagram illustrating the network operation to update message files in the NOC and the calling/receiving terminals in accordance with one embodiment of the invention;

FIG. 7 is a schematic block diagram of the calling terminal of FIG. 1 in accordance with one embodiment of the invention; and

FIG. 8 is a schematic block diagram of the NOC of FIG. 1 in accordance with one embodiment of the invention.

Corresponding reference numerals refer to like parts throughout the drawings.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

As seen in FIG. 1, an electronic messaging network in accordance with a preferred embodiment of the present invention includes, a calling party terminal **10**, a network operation center (NOC) **12**, and a receiving party terminal **14**. It will be appreciated that, in practice, the network will include pluralities of calling and receiving party terminals. The calling party terminal **10** is connected to NOC **12** by a communications link **16**, which may take the form of land line (e.g., phonelines), a direct computer link, a wireless link, or a satellite link. NOC **12** is preferably connected to receiving party terminal **14** by a wireless communications link **18**. An example of a preferable network operation center that can be implemented in the practice of the present invention is the network operation center being developed by Destineer Corporation of Jackson, Miss. to handle their Nationwide Wireless Network (NWN) paging services. That NOC and a preferred two-way wireless network for implementing the present invention are described in U.S. patent application Ser. Number 08/124,216, the contents of which are hereby incorporated by reference.

In accordance with the present invention, calling terminal **10** includes a stored file of canned messages and associated canned message codes. Referring to the flow chart of FIG. 2, when a calling party wishes to send a message to a receiving party at terminal **14** (FIG. 1), the terminal retrieves the file of the canned messages from storage (step **22**) and displays the file to the calling party (step **24**). The calling party browses through the file to determine if the text of any of the canned messages is appropriate to convey the particular message that the calling party wishes to send to the receiving party. If an appropriate canned message is noted, the calling party selects this canned message (step **26**) using suitable pointing means, such as a mouse, cursor, etc. Based on the canned message selection, terminal **10** retrieves the associated canned message code from the file (step **28**).

If the selected canned message calls for the inclusion of a parameter(s), such as, for example, time, date, phone number, etc., the calling party enters a desired parameter(s), using an appropriate entry device, such as a keypad (step **30**). The calling terminal **10** compiles the retrieved message code associated with the selected canned message with an appropriate indicator code, calling and receiving terminal addresses, and added parameters, if any (step **32**). Terminal **10** then transmits the compiled canned message codes and parameters, if any, together with calling and receiving terminal addresses to NOC **12** over communications link **16** (FIG. 1) (step **34**).

Assume, for example, that the canned message selected by the calling party in step **26** is "I am on my way home". This canned message does not call for the addition of parameters. The associated code for this canned message, may be, for example, the number **36** in ASCII code. To indicate that number **36** is a canned message code, the calling terminal **10** adds a suitable indicator code, such as ASCII control character **26**. Thus, the compiled canned message codes representing the canned message "I am on my way home" is transmitted in step **34** to NOC **12** simply as <26>36.

An example of a canned message calling for the inclusion of parameters may be "Call me at at phone number . This canned message calls for the calling party to fill in a desired time parameter and a phone number (step **30**). Suppose the calling party wishes the receiving party to call him at 4 PM at phone number 555-1212, the following canned message codes are then compiled by the calling terminal **10** and transmitted to NOC **12** as:

<26>18<29>4PM<29>5551212

where:

<26> is an ASCII control character serving as a canned message indicator.

18 is the code associated with canned message "Call me at at phone number ".

<29> is an ASCII control character serving as a parameter separator, and

4PM and 5551212 are the keyed-in parameters.

In addition to parameters, the present invention also provides for the addition of response options to certain canned messages typically posed as questions. To this end, terminal **10** maintains a file of canned response options. Then, if the calling party wishes to add response options to a selected canned message, the calling party accesses the canned response options file (step **36**), which is then displayed by terminal **10** (step **38**). The calling party browses through this file to determine which of the multiple response options are appropriate for addition to the selected canned message to be sent to the designated receiving party. The calling party selects the appropriate canned response options (step **40**) in the same manner as in the selection of the canned message, and the calling terminal **10** retrieves the particular codes associated with the selected canned response options (step **42**). If the selected canned response options call for the addition of parameters, such as time, the calling party enters the desired parameter(s) (step **44**). The selected canned response codes and parameters are then compiled with the canned message code and any canned message parameters (step **32**). The calling terminal then transmits the compiled canned message and response codes, together with any parameters to NOC **12** (step **34**).

By way of example, if the selected canned message is "Can we sign the document first thing tomorrow?" followed by selected canned response options "yes", "no", and "change to 1 PM", the canned message codes and parameters transmitted to NOC **12** would preferably be as follows:

<26>62<31><26>1<31><26>2<31><26>7<29>1PM

where:

<26> is an ASCII control character serving as the canned message and multiple response options indicator.

<29> is an ASCII control character serving as the parameter separator.

<31> is an ASCII control character unit separator used as a delineator separating multiple response options from the canned message and from each other.

62 is the code associated with canned message "Can we sign the document first thing tomorrow?",

1 is the code associated with canned response option "yes",

2 is the code associated with canned response option ¢no",

7 is the code associated with canned response option "change to", and

1PM is the keyed-in parameter.

The following example illustrates that, in some cases, parameters added to canned messages may be canned parameters also stored at the calling terminal **10**. Such canned parameters may be included in the canned message file, the canned multiple response options file, or in a separate canned parameter file stored at the calling terminal. If canned parameters are stored in separate file from the canned message file and the canned multiple response option file, parameter selection by the calling party is achieved using a separate subroutine corresponding to the subroutine used to select canned multiple response options.

To illustrate this case, consider the canned message "Can we meet for lunch at or ?", and the selected multiple response options are "noon", "12:30" or "call me". The compilation of codes and parameters transmitted to NOC **12** would then be:

<26>10<26>15<29>12:30<31><26>15<31>12:30<31><26>8

where:

<26> is the ASCII control character serving as the canned message and multiple response options indicator.

<31> is the ASCII control character serving as a delineator for separating the canned message and multiple response options from each other,

<29> is the parameter separator,

10 is the code associated with canned message "Can we meet for lunch at or ?",

8 is the code associated with the canned parameter and response option "call me",

15 is the code associated with canned parameter and response option "noon", and

12:30 is the keyed-in parameter.

FIG. **3** illustrates the operation of NOC **12** in accordance with one embodiment of the invention. The canned message/response option codes and any parameters transmitted by calling terminal **10** over communications link **16** are received by a NOC receiver (step **50**). From the calling and receiving terminal addresses included with the canned message/response option codes, the identities of the calling and receiving terminals **10** and **14** (FIG. **1**) are determined (step **52**). These determinations are stored in memory (step **54**). From the identity of the receiving terminal **14**, NOC **12** determines if receiving terminal **14** is capable of accepting this particular canned message/response option. NOC **12** is programmed to make this determination for several reasons. For example, NOC **12** needs to know whether the designated receiving party is a member of a messaging group or organization that has established a file of customized canned messages and response options and thus has access to a terminal in which files of the customized canned messages/response options and associated codes are stored in memory. Also, the files of canned messages may include both standard, network-wide canned messages and canned messages customized for a particular group. Thus, NOC **12** must determine whether the designated receiving party terminal can accept only standard canned messages/response options, only customized canned messages/response options or both. In any case, NOC **12** maintains multiple files of canned messages and canned response options, including files identical to those stored at calling terminal **10** and possibly also at receiving terminal **14**.

Based on this determination, NOC **12** determines whether the designated receiving party terminal can accept the canned message in code form, i.e., as received from the sending party terminal, or whether the canned message must be transmitted in full text to the receiving party terminal (step **56**). If the designated receiving terminal can accept canned message/response option codes, they are transmitted to the designated receiving party terminal in the same form as received from the sending party terminal (step **58**). If the designated receiving party terminal is not equipped to process canned message/response option codes, NOC **12** uses the canned message/response option codes received from the calling party terminal **10** to retrieve from the appropriate file(s) the text of the associated canned message and multiple response options, if any, from a memory (step **60**). The text of the canned message and response options, together with parameters, is then transmitted in standard message code format by NOC **12** to the receiving terminal (step **58**).

FIG. **4** illustrates the operation of receiving terminal **14** upon receiving a message transmission, according to an embodiment of the invention. Initially, terminal **14** receives the canned message/response option transmission from NOC **12** (step **70**). The receiving terminal then determines whether the canned message/response option reception is in message text or canned message code (step **72**). If in text, the canned message and any response options are displayed to the receiving party (step **74**). Alternatively, if the reception is in canned message/response option codes, the receiving party terminal **14**, using these codes, retrieves the associated canned messages, canned response options, and canned parameters from the various stored files identical to those stored at calling terminal **10** and NOC **12** (step **76**). The retrieved canned message, response options, and parameters, if any, are displayed in text form for viewing by the receiving party terminal (step **74**).

If any response options are included with the canned message, the receiving party selects the appropriate response option (step **78**), which is then transmitted by the receiving terminal back to NOC **12** (step **80**). Since a typical response option is very short, it can be efficiently transmitted back to NOC **12** in ASCII text code format. However, it will be appreciated that the receiving terminal may be so equipped that the code associated with the selected response, as received from NOC **12**, may simply be transmitted back to the NOC **12** in response option code. Alternatively, the receiving terminal may be equipped with keys positioned in associated relation with the display of the multiple response options. Depression of any one of the keys selects the associated one of the response options, and a unique, simple code assigned to the depressed key is transmitted back to the NOC **12**.

FIG. **5** illustrates the operation of the NOC and the calling terminal in relaying a selected response option from the receiving terminal to the calling terminal in accordance with an embodiment of the invention. Initially, NOC **12** receives the selected response option transmitted by the receiving party terminal **14** (step **82**). NOC then determines whether the received response option is in ASCII text code format or in canned response option code (step **83**). If in text code, NOC simply relays the selected response option to the calling party terminal **10** (step **86**). If the selected response

option is received from the receiving party terminal in canned response option code, a decision is made whether to transmit the selected response option to the calling party terminal in canned response code or in ASCII text code (step **84**). If the former, the canned response code is simply transmitted to the calling party terminal **10** as received from the receiving terminal (step **86**). If in ASCII text code, NOC **12** is programmed to access its stored canned multiple response option file and, using the received response option code, retrieve the selected canned response option text (step **88**), which is then transmitted in ASCII text code to the calling party terminal **10** (step **86**).

The selected response option relayed by NOC **12** is received by calling terminal **10** (step **90**), which then determines whether the response option is in text code format or canned response code (step **92**). If in text code, the response option is decoded and displayed to the calling party (step **94**). If the selected response option is in code form, the calling terminal simply accesses its stored response options file and, using the received response option code, retrieves the associated response option text (step **96**), which is then displayed to the calling party (step **94**).

NOC **12**, as part of its system responsibilities, is capable of updating the canned message, canned response option, and canned parameter files. FIG. **6** illustrates the procedure for updating these files in accordance with one embodiment of the invention. NOC **12** updates the files (step **100**) and stores the canned file updates in the NOC memory (step **102**). NOC **12** then transmits the updated canned files to all of the terminals in a particular two-way messaging group, including calling terminal **10** and receiving terminal **14** (step **104**). The canned file updates are received by the messaging group terminals (step **106**) and stored in the terminal memories (step **108**). It will be appreciated that updated canned files may be created at one of the terminals and transmitted to NOC **12**, which then operates to disseminate the file updates to other terminals of the messaging group.

As indicated above, the calling terminal **10** and NOC **12** are disclosed more fully in the cited application Ser. No. 08/124,216 and preferably comprise the structure disclosed in this application. For illustrative purposes, applicants include FIGS. **7** and **8** to illustrate preferred structure in block diagram form.

A preferred structure of calling terminal **10** appropriate for practicing the present invention is illustrated in FIG. **7**. As shown, the calling terminal **10** includes a CPU **110**, a ROM **112** to store an application program for controlling terminal operation in accordance with the present invention, a RAM **114** to store the canned message/response options/parameter files and associated codes, and a compiler **116** for assembling the message/response options/parameter codes, indicator and separator codes, and address codes into a message under the control of the application program and CPU **110**. Calling terminal **10** also includes an input/output (I/O) device **118** selectively connecting a transmitter **120** and a receiver **122** into the terminal circuitry. A coder/decoder **124** encodes text messages transmitted by the terminal to NOC **12** and decodes text messages received from NOC, including selected response options in text code received from a receiving terminal **14**. A terminal keypad **126** is used by the calling party to designate a receiving party (typically by phone number), to retrieve canned message/response options/parameter files from RAM **114**, to scroll through the displayed files, and to select the canned message/response options/parameter(s) appropriate for sending to the receiving party. Display **128** also displays selected response options from receiving parties relayed by NOC **12**. These terminal components are interconnected in operative relation by a system bus **130**. While FIG. **7** illustrates the operative structural configuration of calling terminal **10**, it will be appreciated that, preferably, receiving terminal **14** is structurally configured in the same manner.

FIG. **8** illustrates the structure of NOC **12** in accordance with one embodiment of the invention. As shown, NOC **12** includes a CPU **131** connected by a system bus **132** to an input/output (I/O) device **134**, to which a transmitter **136** and a receiver **138** are connected. A ROM **139** stores an application program appropriate for controlling NOC **12** in accordance with the present invention. A RAM **140** stores sets of canned messages/response options/parameters files for various messaging groups, including the group to which terminals **10** and **14** belong. Thus, RAM **140** stores a set of canned files identical to the set stored in the RAMs of terminals **10** and **14**. NOC **12** also includes a memory **142** for storing the identities of the calling and receiving terminals involved in a message that is being relayed, as well as the messages. Message storage is preferred in case receiving terminals do not receive an original message transmission and, thus, retransmission is required. Retention of terminal identities is required so that selected response options received from receiving terminals are correctly relayed to the appropriate calling terminals.

Finally, NOC **12** also includes a message compiler **144** that may be required for message formatting and for adding appropriate codes, such as terminal address codes not included in the messages being relayed by the NOC. This is particularly so in the case of a selected response option which typically does not include the calling terminal address. NOC then refers to the calling terminal identify stored in memory **142** pursuant to determining the calling terminal address that must be included in the transmission of the selected response option, if it is to be relayed to the correct calling terminal.

It will be apparent to those skilled in the art that various modifications and variations can be made in the method of the present invention without departing from the spirit of the invention. Thus, it is intended that the present invention cover the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

What is claimed is:

1. A method of communicating messages between subscribers to an electronic messaging network, comprising the steps of:

maintaining, at a network operation center, a first file of canned messages and message codes respectively assigned to the canned messages;

maintaining at a first terminal of a first subscriber a second file of canned messages corresponding to the first file;

selecting an appropriate canned message from the second file for transmission to a second terminal of a designated second subscriber;

sending the message code assigned to the selected canned message to the network operation center;

retrieving the selected canned message from the first file using the message code received from the first terminal;

determining whether the second terminal can receive the canned message in a text form or message code form; and

communicating the selected canned message to the second terminal in either message code form or text code form in response to the determination.

2. The method defined in claim **1**, further including the step of updating the first and second canned message files.

3. The method defined in claim 1, further including the step of displaying the selected canned message at the second terminal.

4. The method defined in claim 3, further including the step of adding a parameter to the canned message selected from the second file;

the sending step including the step of sending the added parameter with the assigned message code to the network operation center;

the communicating step including the step of communicating the added parameter with the selected canned message to the second terminal; and

the displaying step including the step of displaying the selected canned message with the added parameter incorporated therein.

5. The method defined in claim 3, further including the steps of:

adding multiple response options to the canned message selected from the second file;

the sending step including the step of sending the added multiple response options with the assigned message code to the network operation center;

the communicating step including the step of communicating the added multiple response options with the selected canned message to the second terminal; and

the displaying step including the step of displaying the selected canned message together with the added multiple response options;

selecting one of the multiple response options at the second terminal;

communicating the selected response option to the network routing the selected response option from the network operation center to the first terminal; and

displaying the selected response option at the first terminal.

6. The method defined in claim 5, further including the step of adding a parameter to the canned message selected from the second file;

the sending step further including the step of sending the added parameter to the network operation center together with the assigned message code and the multiple response options;

the communicating step further including the step of communicating the selected canned message, multiple response options, and added parameter to the second terminal; and

the displaying step at the second terminal further including the step of displaying the selected canned message, added parameter, and multiple response options.

7. The method defined in claim 6, further including the step of correspondingly updating the first and second canned message files.

8. A method of communicating messages between subscribers to an electronic messaging network, comprising the steps of:

maintaining, at a network operation center, a first file of canned messages and message codes respectively assigned to the canned messages;

maintaining at a first terminal of a first subscriber, a second file of canned messages and message codes corresponding to the first file;

maintaining, at a second terminal of a second subscriber, a third file of canned messages and message codes corresponding to the first file;

selecting an appropriate canned message from the second file for transmission to the second terminal;

sending the message code assigned to the selected canned message to the network operation center;

relaying the message code assigned to the selected canned message from the network operation center to the second terminal;

retrieving the selected canned message from the third file using the assigned message code received from the network operation center; and

displaying the selected canned message retrieved from the third file.

9. The method defined in claim 8, further including the step of updating the first, second, and third canned message files.

10. The method defined in claim 8, further including the step of adding a parameter to the canned message selected from the second file;

the sending step including the step of sending the added parameter with the assigned message code to the network operation center;

the relaying step including the step of relaying the added parameter with the assigned message code to the second terminal; and

the displaying step including the step of displaying the selected canned message with the added parameter incorporated therein.

11. The method defined in claim 8, further including the steps of:

adding multiple response options to the canned message selected from the second file;

the sending step including the step of sending the added multiple response options with the assigned message code to the network operation center;

the relaying step including the step of relaying the added multiple response options with the assigned message code to the second terminal; and

the displaying step including the step of displaying the selected canned message together with the added multiple response options;

selecting one of the multiple response options at the second terminal;

communicating the selected response option to the network operation center;

routing the selected response option from the network operation center to the first terminal; and

displaying the selected response option at the first terminal.

12. The method defined in claim 11, further including the steps of:

maintaining at the network operation center, a fourth file of canned multiple response options and response codes respectively assigned to the canned multiple response options;

maintaining at the first terminal, a fifth file of canned multiple response options and response codes corresponding to the fourth file; and

maintaining, at the second terminal, a sixth file of canned multiple response options and response codes corresponding to the fourth file;

wherein the selecting step further includes

the step of selecting appropriate canned multiple response options from the fifth file;

the sending step further includes the step of sending the response codes assigned to the selected multiple

response options together with the message code to the network operation center;

the relaying step further includes the step of relaying the message and response codes from the network operation center to the second terminal; and

the retrieving step further includes the step of retrieving the selected canned multiple response options from the sixth file using the assigned response codes received from the network operation center.

13. The method defined in claim **12**, further including the step of adding a parameter to the canned message selected from the second file;

the sending step further including the step of sending the added parameter to the network operation center together with the assigned message and response codes; the relaying step further including the step of relaying the added parameter with the assigned message and response codes to the second terminal, and

the displaying step at the second terminal further including the step of displaying the selected canned message and multiple response options with the added parameter incorporated therein.

14. The method defined in claim **13**, further including the step of correspondingly updating the first through sixth files.

15. A network operation center for use in an electronic messaging network, comprising:

a memory storing a file of canned messages in text form, each canned message having a unique, abbreviated message code assigned thereto;

a receiver for receiving a message code from a calling terminal included in the network;

means responsive to the received message code for retrieving from the memory the canned message assigned thereto;

means for determining whether a receiving terminal in the network can receive the canned message in text form or message code form; and

a transmitter for transmitting the retrieved canned message in text form or message code form in response to the determining means.

16. The network operation center defined in claim **15**, the determining means routing the received message code directly to the transmitter upon determination that the receiving terminal can receive the canned message in message code form.

17. The network operation center defined in claim **15**, further including means for updating the canned message file stored in the memory and a corresponding canned message file stored in a memory in at least the calling terminal.

18. The network operation center defined in claim **15**, wherein the memory stores a separate file of canned multiple response options having response codes respectively assigned thereto;

said responsive means further including means for retrieving from the memory those canned multiple response options assigned to response codes received from the calling terminal by the receiver, the retrieved canned message and multiple response options being transmitted to the receiving terminal by the transmitter; and

the network operation center further including means for routing a selected canned multiple response option received from the receiving terminal to the calling terminal in either text or response code form.

19. A message terminal for use in an electronic messaging network, comprising:

a memory storing a file of canned messages and message codes respectively assigned thereto and a file of canned multiple response options and response codes respectively assigned thereto;

means for retrieving the file of canned messages and the file of canned multiple response options from the memory;

a display for displaying the canned messages and the multiple response options in the retrieved file;

means for selecting one of the canned messages and at least one of the multiple response options appropriate for the selected canned message for communication to a designated other message terminal; and

a transmitter for transmitting the message code assigned to the selected canned message and the response code assigned to the at least one multiple response option over a communications link of the network.

20. The message terminal defined in claim **19**, further including means for adding parameters to the selected canned message for inclusion with the assigned message code transmitted over the communications link.

21. A message terminal for use in an electronic messaging network, comprising::

a memory storing a file of canned messages, and message codes respectively assigned thereto and a file of canned multiple response options and response codes respectively assigned thereto;

means for retrieving the file of canned messages and message codes from the memory;

a display for displaying the canned messages in the retrieved file;

means for selecting one of the canned messages for communication to a designated other message terminal and for selecting multiple response options appropriate for the selected canned message;

a message compiler for compiling the assigned message code and the response codes assigned to the selected multiple response options into a message for transmission by the transmitter; and

a transmitter for transmitting the message code assigned to the selected canned message over a communications link of the network.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO.: 5,894,506

DATED: April 13, 1999

INVENTOR: Gregory J. Pinter

It is certified that an error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Claim 5, column 9, line 34, after "work" insert --operation center;-- then start a new indented line beginning with "routing".

Signed and Sealed this

Fourteenth Day of September, 1999

Attest:

Q. TODD DICKINSON

Attesting Officer

Acting Commissioner of Patents and Trademarks

PATENT APPLICATION SERIAL NO. 08/708696

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
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U.S. PATENT APPLICATION

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APPLICANT

GREGORY J. PINTER, BRANDON, MS.

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ADDRESS

FINNEGAN HENDERSON FARABOW GARRETT AND
DUNNER
1300 I STRET N W
WASHINGTON DC 20005

TITLE

METHOD AND APPARATUS FOR GENERATING AND COMMUNICATING MESSAGES
BETWEEN SUBSCRIBERS TO AN ELECTRONIC MESSAGING NETWORK

This is to certify that annexed hereto is a true copy from the records of the United States Patent and Trademark Office of the application which is identified above.

By authority of the
COMMISSIONER OF PATENTS AND TRADEMARKS

Date Certifying Officer

08/708696

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.
1300 I STREET, N.W.
WASHINGTON, DC 20005-3315

202•408•4000
FACSIMILE 202•408•4400

WRITER'S DIRECT DIAL NUMBER

(202) 408-4148

BRUSSELS OFFICE:
AVENUE LOUISE 326, BOX 37
1050 BRUSSELS, BELGIUM
TELEPHONE 011•322•646•0353
FACSIMILE 011•322•646•2135

TOKYO OFFICE:
TORANOMON NO. 45 MORI BUILDING
1-5, TORANOMON 5-CHOME
MINATO-KU, TOKYO 105, JAPAN
TELEPHONE 011•813•3431•6943
FACSIMILE 011•813•3431•6945

September 5, 1996

ATTORNEY DOCKET NO. 03680.0132

Box Patent Application
Assistant Commissioner for Patents
Washington, D. C. 20231

Re: New U.S. Patent Application
Title: METHOD AND APPARATUS FOR GENERATING AND COMMUNICATING MESSAGES BETWEEN SUBSCRIBERS TO AN ELECTRONIC MESSAGING NETWORK
Inventor: Gregory J. Pinter

Sir:

We enclose the following papers for filing in the United States Patent and Trademark Office in connection with the above patent application:

1. Application - 28 pages, including 4 independent claims and 21 claims total;
2. Drawings - 7 sheets of informal drawings;
3. Declaration and Power of Attorney;
4. Recordation Form Cover Sheet and Assignment to Mobile Telecommunication Technologies; and
5. A check for $890.00, representing a $750.00 filing fee, an additional claims fee of $100.00, and $40.00 for recordation of the Assignment.

Please accord this application a serial number and filing date and record and return the Assignment to the undersigned.

The Commissioner is hereby authorized to charge any additional filing fees due and any other fees due under 37 C.F.R. § 1.16 or § 1.17 during the pendency of this application to our Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER

By: Robert A. Cahill
Robert A. Cahill
Reg. No. 20,557

RAC/loh
Enclosures

Attorney Docket No.: 3680.0132

APPLICATION FOR

UNITED STATES LETTERS PATENT

OF

GREGORY J. PINTER

FOR

METHOD AND APPARATUS

FOR GENERATING AND COMMUNICATING

MESSAGES BETWEEN SUBSCRIBERS

TO AN ELECTRONIC MESSAGING NETWORK

LAW OFFICES
NEGAN, HENDERSON,
ARABOW, GARRETT
& DUNNER, L.L.P.
1300 I STREET, N. W.
SHINGTON, DC 20005
202-408-4000

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850-101 08/708646

FIELD OF THE INVENTION

The present invention relates to electronic information services and more particularly to the exchange of electronic messages among subscribers to an electronic messaging network.

BACKGROUND OF THE INVENTION

As more and more people sign on to information networks, congestion of the communications links comprising these networks, both wireline and wireless, and the consequential transmission delays become increasingly significant problems. Faster transmission rates, data compression techniques, and more efficient spectrum utilization are among the approaches that have been considered, and to some extent implemented, to increase the capacities of communications links.

One area of particularly rapid growth is the electronic messaging field. More and more people are moving about with portable devices, such as laptop computers and portable digital devices, which can be economically equipped to function as message sending/receiving terminals. Moreover, wireless paging hardware, software, and support services are being upgraded to accommodate two-way messaging. That is, portable pagers are being developed not only to receiving paging messages, but also to send back a signal acknowledging receipt of a paging message or even a message answering the received paging message. While such upgraded paging services are highly desirable, they can severely strain the capacity of wireless paging channels.

LAW OFFICES
NEGAN, HENDERSON, ARABOW, GARRETT & DUNNER, L.L.P.
300 I STREET, N.W.
SHINGTON, DC 20005
202-408-4000

SUMMARY OF THE INVENTION

It is accordingly a principle object of the present invention to provide an improved electronic messaging network and method, wherein communications link capacity is conserved by transmitting certain messages with an improved degree of message compression.

Particularly in the case of radio paging, many paging messages consists of a relatively small number of common phrases, such as "I am on the way home", "I am working late", "Can we meet for lunch", etc. This being the case, such commonly used phrases can be treated as "canned" messages that can be replaced by short message codes as simple as, for example, one or several ASCII characters.

The present invention takes advantage of this fact by providing, in accordance with one preferred embodiment, a method of communicating messages between subscribers of an electronic messaging network, comprising the steps of maintaining, at a network operation center, a first file of canned messages individually retrievable using unique, abbreviated message codes respectively assigned to the canned messages; maintaining, at a terminal of a calling subscriber, a second file of canned messages corresponding to the first file; selecting an appropriate canned message from the second file for transmission to a terminal of a designated receiving subscriber; sending the message code assigned to the selected canned message to the network operation center; retrieving the selected canned message from the first file using the message code received from the

LAW OFFICES
FINNEGAN, HENDERSON,
FARABOW, GARRETT
& DUNNER, L.L.P.
1300 I STREET, N. W.
WASHINGTON, DC 20005
202-408-4000

calling subscriber terminal; and communicating the selected canned message to the designated receiving party terminal where it is displayed.

In accordance with a feature of the present invention, the first and second canned message files may be updated, either by the network operation center or from a subscriber terminal in order to customize the canned messages according to the needs of a particular group or organization of subscribers. In addition, the canned messages may be phrased to accept the addition of one or more parameters, which are entered at the calling subscriber terminal and then included with the message codes sent to the network operation center. The selected canned messages are retrieved from the first file using the message codes and communicated to terminals of designated receiving subscribers with the added parameters incorporated in the bodies of the canned messages.

The present invention also accommodates the addition of multiple response options to the canned messages selected by calling subscribers. The multiple response options are then included with the canned message codes sent to the network operation center. The selected canned messages are then retrieved from the first file and communicated to the designated receiving subscribers, together with the added multiple response options. The receiving parties then select the appropriate one of the multiple options for transmission back to the appropriate calling subscribers via the network operation center. The multiple response options may also be canned responses

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maintained in files at the network operation center and the subscriber terminals and, like the canned messages, have assigned response codes that are handled in the same manner as the message codes.

In accordance with another feature of the present invention, corresponding canned message files are also maintained at receiving subscriber terminals, such that the canned messages may be communicated to the receiving subscribers in message code form. The received message codes are then used to retrieve the appropriate canned messages and multiple response options from stored files, and displayed by the receiving party terminals.

Additional features and advantages of the invention will be set forth in the description which follows, and in part will be apparent from the description, or may be learned by practice of the invention. The objectives and other advantages of the invention may be realized and attained by the method and apparatus particularly pointed out in the written description and the appended claims, as well as the accompanying drawings.

It will be understood that both the foregoing general description and the following detailed description are exemplary and explanatory and are intended to provide further explanation of the invention as claimed.

The accompanying drawings are intended to provide a further understanding of the invention and are incorporated in and constitute a part of the specification, illustrate a

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preferred embodiment of the invention, and, together with the description, serve to explain the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a block diagram illustrating an electronic messaging network utilized in the practice of a preferred embodiment of the present invention;

Fig. 2 is a flow diagram illustrating the operation of a calling terminal in the network of Fig. 1 when sending a message in accordance with one embodiment of the invention;

Fig. 3 is a flow diagram illustrating the operation of the network operation center (NOC) in the network of Fig. 1 when relaying a message from the calling terminal to the receiving terminal in accordance with one embodiment of the invention;

Fig. 4 is a flow diagram illustrating the operation of the receiving terminal in the network of Fig. 1 when receiving a message in accordance with one embodiment of the invention;

Fig. 5 is a flow diagram illustrating the operations of the NOC and the calling terminal regarding a message response from the receiving terminal in accordance with one embodiment of the invention;

Fig. 6 is a flow diagram illustrating the network operation to update message files in the NOC and the calling/receiving terminals in accordance with one embodiment of the invention;

Fig. 7 is a schematic block diagram of the calling terminal of Fig. 1 in accordance with one embodiment of the invention; and

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Fig. 8 is a schematic block diagram of the NOC of Fig. 1 in accordance with one embodiment of the invention.

Corresponding reference numerals refer to like parts throughout the drawings.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

As seen in Fig. 1, an electronic messaging network in accordance with a preferred embodiment of the present invention includes, a calling party terminal 10, a network operation center (NOC) 12, and a receiving party terminal 14. It will be appreciated that, in practice, the network will include pluralities of calling and receiving party terminals. The calling party terminal 10 is connected to NOC 12 by a communications link 16, which may take the form of land line (e.g., phonelines), a direct computer link, a wireless link, or a satellite link. NOC 12 is preferably connected to receiving party terminal 14 by a wireless communications link 18. An example of a preferable network operation center that can be implemented in the practice of the present invention is the network operation center being developed by Destineer Corporation of Jackson, MS to handle their Nationwide Wireless Network (NWN) paging services. That NOC and a preferred two-way wireless network for implementing the present invention are described in U.S. Patent Application Serial Number 08/124,216, the contents of which are hereby incorporated by reference.

In accordance with the present invention, calling terminal 10 includes a stored file of canned messages and associated canned message codes. Referring to the flow chart of Fig. 2,

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when a calling party wishes to send a message to a receiving party at terminal 14 (Fig. 1), the terminal retrieves the file of the canned messages from storage (step 22) and displays the file to the calling party (step 24). The calling party browses through the file to determine if the text of any of the canned messages is appropriate to convey the particular message that the calling party wishes to send to the receiving party. If an appropriate canned message is noted, the calling party selects this canned message (step 26) using suitable pointing means, such as a mouse, cursor, etc. Based on the canned message selection, terminal 10 retrieves the associated canned message code from the file (step 28).

If the selected canned message calls for the inclusion of a parameter(s), such as, for example, time, date, phone number, etc., the calling party enters a desired parameter(s), using an appropriate entry device, such as a keypad (step 30). The calling terminal 10 compiles the retrieved message code associated with the selected canned message with an appropriate indicator code, calling and receiving terminal addresses, and added parameters, if any (step 32). Terminal 10 then transmits the compiled canned message codes and parameters, if any, together with calling and receiving terminal addresses to NOC 12 over communications link 16 (Fig. 1) (step 34).

Assume, for example, that the canned message selected by the calling party in step 26 is "I am on my way home". This canned message does not call for the addition of parameters. The associated code for this canned message, may be, for

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example, the number 36 in ASCII code. To indicate that number 36 is a canned message code, the calling terminal 10 adds a suitable indicator code, such as ASCII control character 26. Thus, the compiled canned message codes representing the canned message "I am on my way home" is transmitted in step 34 to NOC 12 simply as <26>36.

An example of a canned message calling for the inclusion of parameters may be "Call me at _____ at phone number _____." This canned message calls for the calling party to fill in a desired time parameter and a phone number (step 30). Suppose the calling party wishes the receiving party to call him at 4 PM at phone number 555-1212, the following canned message codes are then compiled by the calling terminal 10 and transmitted to NOC 12 as:

<26>18<29>4PM<29>5551212

where:

<26> is an ASCII control character serving as a canned message indicator,

18 is the code associated with canned message "Call me at _____ at phone number _____",

<29> is an ASCII control character serving as a parameter separator, and

4PM and 5551212 are the keyed-in parameters.

In addition to parameters, the present invention also provides for the addition of response options to certain canned messages typically posed as questions. To this end, terminal 10 maintains a file of canned response options. Then, if the

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calling party wishes to add response options to a selected canned message, the calling party accesses the canned response options file (step 36), which is then displayed by terminal 10 (step 38). The calling party browses through this file to determine which of the multiple response options are appropriate for addition to the selected canned message to be sent to the designated receiving party. The calling party selects the appropriate canned response options (step 40) in the same manner as in the selection of the canned message, and the calling terminal 10 retrieves the particular codes associated with the selected canned response options (step 42). If the selected canned response options call for the addition of parameters, such as time, the calling party enters the desired parameter(s) (step 44). The selected canned response codes and parameters are then compiled with the canned message code and any canned message parameters (step 32). The calling terminal then transmits the compiled canned message and response codes, together with any parameters to NOC 12 (step 34).

By way of example, if the selected canned message is "Can we sign the document first thing tomorrow?" followed by selected canned response options "yes", "no", and "change to 1PM", the canned message codes and parameters transmitted to NOC 12 would preferably be as follows:

<26>62<31><26>1<31><26>2<31><26>7<29>1PM

where:

<26> is an ASCII control character serving as the canned message and multiple response options indicator,

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<29> is an ASCII control character serving as the parameter separator,

<31> is an ASCII control character unit separator used as a delineator separating multiple response options from the canned message and from each other,

62 is the code associated with canned message "Can we sign the document first thing tomorrow?",

1 is the code associated with canned response option "yes",

2 is the code associated with canned response option "no",

7 is the code associated with canned response option "change to", and

1PM is the keyed-in parameter.

The following example illustrates that, in some cases, parameters added to canned messages may be canned parameters also stored at the calling terminal 10. Such canned parameters may be included in the canned message file, the canned multiple response options file, or in a separate canned parameter file stored at the calling terminal. If canned parameters are stored in a separate file from the canned message file and the canned multiple response option file, parameter selection by the calling party is achieved using a separate subroutine corresponding to the subroutine used to select canned multiple response options.

To illustrate this case, consider the canned message "Can we meet for lunch at ____ or _____?", and the selected multiple

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response options are "noon", "12:30" or "call me". The compilation of codes and parameters transmitted to NOC 12 would then be:

<26>10<26>15<29>12:30<31><26>15<31>12:30<31><26>8

where:

<26> is the ASCII control character serving as the canned message and multiple response options indicator,

<31> is the ASCII control character serving as a delineator for separating the canned message and multiple response options from each other,

<29> is the parameter separator,

10 is the code associated with canned message "Can we meet for lunch at _____ or _____?",

8 is the code associated with the canned parameter and response option "call me",

15 is the code associated with canned parameter and response option "noon", and

12:30 is the keyed-in parameter.

Fig. 3 illustrates the operation of NOC 12 in accordance with one embodiment of the invention. The canned message/response option codes and any parameters transmitted by calling terminal 10 over communications link 16 are received by a NOC receiver (step 50). From the calling and receiving terminal addresses included with the canned message/response option codes, the identities of the calling and receiving terminals 10 and 14 (Fig. 1) are determined (step 52). These determinations are stored in memory (step 54). From the identity of the

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receiving terminal 14, NOC 12 determines if receiving terminal 14 is capable of accepting this particular canned message/ response option. NOC 12 is programmed to make this determination for several reasons. For example, NOC 12 needs to know whether the designated receiving party is a member of a messaging group or organization that has established a file of customized canned messages and response options and thus has access to a terminal in which files of the customized canned messages/response options and associated codes are stored in memory. Also, the files of canned messages may include both standard, network-wide canned messages and canned messages customized for a particular group. Thus, NOC 12 must determine whether the designated receiving party terminal can accept only standard canned messages/response options, only customized canned messages/response options or both. In any case, NOC 12 maintains multiple files of canned messages and canned response options, including files identical to those stored at calling terminal 10 and possibly also at receiving terminal 14.

Based on this determination, NOC 12 determines whether the designated receiving party terminal can accept the canned message in code form, i.e., as received from the sending party terminal, or whether the canned message must be transmitted in full text to the receiving party terminal (step 56). If the designated receiving terminal can accept canned message/response option codes, they are transmitted to the designated receiving party terminal in the same form as received from the sending party terminal (step 58). If the designated receiving party

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terminal is not equipped to process canned message/response option codes, NOC 12 uses the canned message/response option codes received from the calling party terminal 10 to retrieve from the appropriate file(s) the text of the associated canned message and multiple response options, if any, from a memory (step 60). The text of the canned message and response options, together with parameters, is then transmitted in standard message code format by NOC 12 to the receiving terminal (step 58).

Fig. 4 illustrates the operation of receiving terminal 14 upon receiving a message transmission, according to an embodiment of the invention. Initially, terminal 14 receives the canned message/response option transmission from NOC 12 (step 70). The receiving terminal then determines whether the canned message/response option reception is in message text or canned message code (step 72). If in text, the canned message and any response options are displayed to the receiving party (step 74). Alternatively, if the reception is in canned message/response option codes, the receiving party terminal 14, using these codes, retrieves the associated canned messages, canned response options, and canned parameters from the various stored files identical to those stored at calling terminal 10 and NOC 12 (step 76). The retrieved canned message, response options, and parameters, if any, are displayed in text form for viewing by the receiving party terminal (step 74).

If any response options are included with the canned message, the receiving party selects the appropriate response

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option (step 78), which is then transmitted by the receiving terminal back to NOC 12 (step 80). Since a typical response option is very short, it can be efficiently transmitted back to NOC 12 in ASCII text code format. However, it will be appreciated that the receiving terminal may be so equipped that the code associated with the selected response, as received from NOC 12, may simply be transmitted back to the NOC 12 in response option code. Alternatively, the receiving terminal may be equipped with keys positioned in associated relation with the display of the multiple response options. Depression of any one of the keys selects the associated one of the response options, and a unique, simple code assigned to the depressed key is transmitted back to the NOC 12.

Fig. 5 illustrates the operation of the NOC and the calling terminal in relaying a selected response option from the receiving terminal to the calling terminal in accordance with an embodiment of the invention. Initially, NOC 12 receives the selected response option transmitted by the receiving party terminal 14 (step 82). NOC then determines whether the received response option is in ASCII text code format or in canned response option code (step 83). If in text code, NOC simply relays the selected response option to the calling party terminal 10 (step 86). If the selected response option is received from the receiving party terminal in canned response option code, a decision is made whether to transmit the selected response option to the calling party terminal in canned response code or in ASCII text code (step 84). If the former, the canned

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response code is simply transmitted to the calling party terminal 10 as received from the receiving terminal (step 86). If in ASCII text code, NOC 12 is programmed to access its stored canned multiple response option file and, using the received response option code, retrieve the selected canned response option text (step 88), which is then transmitted in ASCII text code to the calling party terminal 10 (step 86).

The selected response option relayed by NOC 12 is received by calling terminal 10 (step 90), which then determines whether the response option is in text code format or canned response code (step 92). If in text code, the response option is decoded and displayed to the calling party (step 94). If the selected response option is in code form, the calling terminal simply accesses its stored response options file and, using the received response option code, retrieves the associated response option text (step 96), which is then displayed to the calling party (step 94).

NOC 12, as part of its system responsibilities, is capable of updating the canned message, canned response option, and canned parameter files. Fig. 6 illustrates the procedure for updating these files in accordance with one embodiment of the invention. NOC 12 updates the files (step 100) and stores the canned file updates in the NOC memory (step 102). NOC 12 then transmits the updated canned files to all of the terminals in a particular two-way messaging group, including calling terminal 10 and receiving terminal 14 (step 104). The canned file updates are received by the messaging group terminals (step 106)

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and stored in the terminal memories (step 108). It will be appreciated that updated canned files may be created at one of the terminals and transmitted to NOC 12, which then operates to disseminate the file updates to other terminals of the messaging group.

As indicated above, the calling terminal 10 and NOC 12 are disclosed more fully in the cited application Serial No. 08/124,216 and preferably comprise the structure disclosed in this application. For illustrative purposes, applicants include Figs. 7 and 8 to illustrate preferred structure in block diagram form.

A preferred structure of calling terminal 10 appropriate for practicing the present invention is illustrated in Fig. 7. As shown, the calling terminal 10 includes a CPU 110, a ROM 112 to store an application program for controlling terminal operation in accordance with the present invention, a RAM 114 to store the canned message/response options/parameter files and associated codes, and a compiler 116 for assembling the message/response options/parameter codes, indicator and separator codes, and address codes into a message under the control of the application program and CPU 110. Calling terminal 10 also includes an input/output (I/O) device 118 selectively connecting a transmitter 120 and a receiver 122 into the terminal circuitry. A coder/decoder 124 encodes text messages transmitted by the terminal to NOC 12 and decodes text messages received from NOC, including selected response options in text code received from a receiving terminal 14. A terminal keypad

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126 is used by the calling party to designate a receiving party (typically by phone number), to retrieve canned message/response options/ parameter files from RAM 114, to scroll through the displayed files, and to select the canned message/response options/ parameter(s) appropriate for sending to the receiving party. Display 128 also displays selected response options from receiving parties relayed by NOC 12. These terminal components are interconnected in operative relation by a system bus 130. While Fig. 7 illustrates the operative structural configuration of calling terminal 10, it will be appreciated that, preferably, receiving terminal 14 is structurally configured in the same manner.

Fig. 8 illustrates the structure of NOC 12 in accordance with one embodiment of the invention. As shown, NOC 12 includes a CPU 131 connected by a system bus 132 to an input/output (I/O) device 134, to which a transmitter 136 and a receiver 138 are connected. A ROM 139 stores an application program appropriate for controlling NOC 12 in accordance with the present invention. A RAM 140 stores sets of canned messages/response options/ parameters files for various messaging groups, including the group to which terminals 10 and 14 belong. Thus, RAM 140 stores a set of canned files identical to the set stored in the RAMs of terminals 10 and 14. NOC 12 also includes a memory 142 for storing the identities of the calling and receiving terminals involved in a message that is being relayed, as well as the messages. Message storage is preferred in case receiving terminals do not receive an original message transmission and,

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thus, retransmission is required. Retention of terminal identities is required so that selected response options received from receiving terminals are correctly relayed to the appropriate calling terminals.

Finally, NOC 12 also includes a message compiler 144 that may be required for message formatting and for adding appropriate codes, such as terminal address codes not included in the messages being relayed by the NOC. This is particularly so in the case of a selected response option which typically does not include the calling terminal address. NOC then refers to the calling terminal identify stored in memory 142 pursuant to determining the calling terminal address that must be included in the transmission of the selected response option, if it is to be relayed to the correct calling terminal.

It will be apparent to those skilled in the art that various modifications and variations can be made in the method of the present invention without departing from the spirit of the invention. Thus, it is intended that the present invention cover the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

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WHAT IS CLAIMED IS:

1. A method of communicating messages between subscribers to an electronic messaging network, comprising the steps of:

maintaining, at a network operation center, a first file of canned messages and message codes respectively assigned to the canned messages;

maintaining at a first terminal of a first subscriber a second file of canned messages corresponding to the first file;

selecting an appropriate canned message from the second file for transmission to a second terminal of a designated second subscriber;

sending the message code assigned to the selected canned message to the network operation center;

retrieving the selected canned message from the first file using the message code received from the first terminal; and

communicating the selected canned message to the second terminal.

2. The method defined in claim 1, further including the step of updating the first and second canned message files.

3. The method defined in claim 1, further including the step of displaying the selected canned message at the second terminal.

4. The method defined in claim 3, further including the step of adding a parameter to the canned message selected from the second file;

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the sending step including the step of sending the added parameter with the assigned message code to the network operation center;

the communicating step including the step of communicating the added parameter with the selected canned message to the second terminal; and

the displaying step including the step of displaying the selected canned message with the added parameter incorporated therein.

5. The method defined in claim 3, further including the steps of:

adding multiple response options to the canned message selected from the second file;

the sending step including the step of sending the added multiple response options with the assigned message code to the network operation center;

the communicating step including the step of communicating the added multiple response options with the selected canned message to the second terminal; and

the displaying step including the step of displaying the selected canned message together with the added multiple response options;

selecting one of the multiple response options at the second terminal;

communicating the selected response option to the network operation center;

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routing the selected response option from the network operation center to the first terminal; and

displaying the selected response option at the first terminal.

6. The method defined in claim 5, further including the step of adding a parameter to the canned message selected from the second file;

the sending step further including the step of sending the added parameter to the network operation center together with the assigned message code and the multiple response options;

the communicating step further including the step of communicating the selected canned message, multiple response options, and added parameter to the second terminal; and

the displaying step at the second terminal further including the step of displaying the selected canned message, added parameter, and multiple response options.

7. The method defined in claim 6, further including the step of correspondingly updating the first and second canned message files.

8. A method of communicating messages between subscribers to an electronic messaging network, comprising the steps of:

maintaining, at a network operation center, a first file of canned messages and message codes respectively assigned to the canned messages;

maintaining at a first terminal of a first subscriber, a second file of canned messages and message codes corresponding to the first file;

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maintaining, at a second terminal of a second subscriber, a third file of canned messages and message codes corresponding to the first file;

selecting an appropriate canned message from the second file for transmission to the second terminal;

sending the message code assigned to the selected canned message to the network operation center;

relaying the message code assigned to the selected canned message from the network operation center to the second terminal;

retrieving the selected canned message from the third file using the assigned message code received from the network operation center; and

displaying the selected canned message retrieved from the third file.

9. The method defined in claim 8, further including the step of updating the first, second, and third canned message files.

10. The method defined in claim 8, further including the step of adding a parameter to the canned message selected from the second file;

the sending step including the step of sending the added parameter with the assigned message code to the network operation center;

the relaying step including the step of relaying the added parameter with the assigned message code to the second terminal; and

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the displaying step including the step of displaying the selected canned message with the added parameter incorporated therein.

11. The method defined in claim 8, further including the steps of:

adding multiple response options to the canned message selected from the second file;

the sending step including the step of sending the added multiple response options with the assigned message code to the network operation center;

the relaying step including the step of relaying the added multiple response options with the assigned message code to the second terminal; and

the displaying step including the step of displaying the selected canned message together with the added multiple response options;

selecting one of the multiple response options at the second terminal;

communicating the selected response option to the network operation center;

routing the selected response option from the network operation center to the first terminal; and

displaying the selected response option at the first terminal.

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12. The method defined in claim 11, further including the steps of:

maintaining at the network operation center, a fourth file of canned multiple response options and response codes respectively assigned to the canned multiple response options;

maintaining at the first terminal, a fifth file of canned multiple response options and response codes corresponding to the fourth file; and

maintaining, at the second terminal, a sixth file of canned multiple response options and response codes corresponding to the fourth file;

wherein the selecting step further includes

the step of selecting appropriate canned multiple response options from the fifth file;

the sending step further includes the step of sending the response codes assigned to the selected multiple response options together with the message code to the network operation center;

the relaying step further includes the step of relaying the message and response codes from the network operation center to the second terminal; and

the retrieving step further includes the step of retrieving the selected canned multiple response options from the sixth file using the assigned response codes received from the network operation center.

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13. The method defined in claim 12, further including the step of adding a parameter to the canned message selected from the second file;

the sending step further including the step of sending the added parameter to the network operation center together with the assigned message and response codes; the relaying step further including the step of relaying the added parameter with the assigned message and response codes to the second terminal, and

the displaying step at the second terminal further including the step of displaying the selected canned message and multiple response options with the added parameter incorporated therein.

14. The method defined in claim 13, further including the step of correspondingly updating the first through sixth files.

~~15. A network operation center for use in an electronic~~ messaging network, comprising:

a memory storing a file of canned messages in text form, each canned message having a unique, abbreviated message code assigned thereto;

a receiver for receiving a message code from a calling terminal included in the network;

means responsive to the received message code for retrieving from the memory the canned message assigned thereto; and

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a transmitter for transmitting the retrieved canned message in text form to a receiving terminal included in the network.

16. The network operation center defined in claim 15, further including means for determining whether to transmit the canned message to the receiving terminal in text or message code form, said determining means routing the received message code directly to the transmitter upon determination to transit the canned message in code form to the receiving terminal.

17. The network operation center defined in claim 15, further including means for updating the canned message file stored in the memory and a corresponding canned message file stored in a memory in at least the calling terminal.

18. The network operation center defined in claim 15, wherein the memory stores a separate file of canned multiple response options having response codes respectively assigned thereto;

said responsive means further including means for retrieving from the memory those canned multiple response options assigned to response codes received from the calling terminal by the receiver, the retrieved canned message and multiple response options being transmitted to the receiving terminal by the transmitter; and

the network operation center further including means for routing a selected canned multiple response option received from the receiving terminal to the calling terminal in either text or response code form.

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19. A message terminal for use in an electronic messaging network, comprising:

a memory storing a file of canned messages and message codes respectively assigned thereto;

means for retrieving the file from the memory;

a display for displaying the canned messages in the retrieved file;

means for selecting one of the canned messages for communication to a designated other message terminal; and

a transmitter for transmitting the message code assigned to the selected canned message over a communications link of the network.

20. The message terminal defined in claim 19, further including means for adding parameters to the selected canned message for inclusion with the assigned message code transmitted over the communications link.

21. The message terminal defined in claim 20, wherein the memory further stores a file of canned multiple response options and response codes respectively assigned thereto for retrieval by the retrieving means and display by the display;

the selecting means further including means for selecting multiple response options appropriate for the selected canned message; and

the message terminal further comprising a message compiler for compiling the assigned message code and the response codes assigned to the selected multiple response options into a message for transmission by the transmitter.

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ARABOW, GARRETT
& DUNNER, L.L.P.
300 I STREET, N. W.
SHINGTON, DC 20005
202-408-4000

ABSTRACT OF THE DISCLOSURE 08/708696

An electronic messaging network comprises a network operation center and plural message terminals, all including memories for storing corresponding files of canned messages and associated message codes. To send a canned message, a calling party selects a canned message stored at one message terminal and transmits the assigned message code to a receiving party at another message terminal via the network operation center. The receiving terminal retrieves the selected canned message from its memory using the received message code for display to the receiving party. Files of canned responses and associated response codes may also be stored in the memories at the terminals and network operation center to allow the exchange of selected canned response options in conjunction with canned messages to be in response code form.

LAW OFFICES
NNEGAN, HENDERSON,
FARABOW, GARRETT
& DUNNER, L.L.P.
1300 I STREET, N. W.
WASHINGTON, DC 20005
202-408-4000

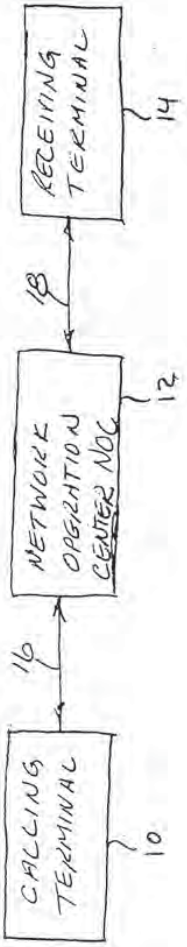


Fig 1

8 Figures

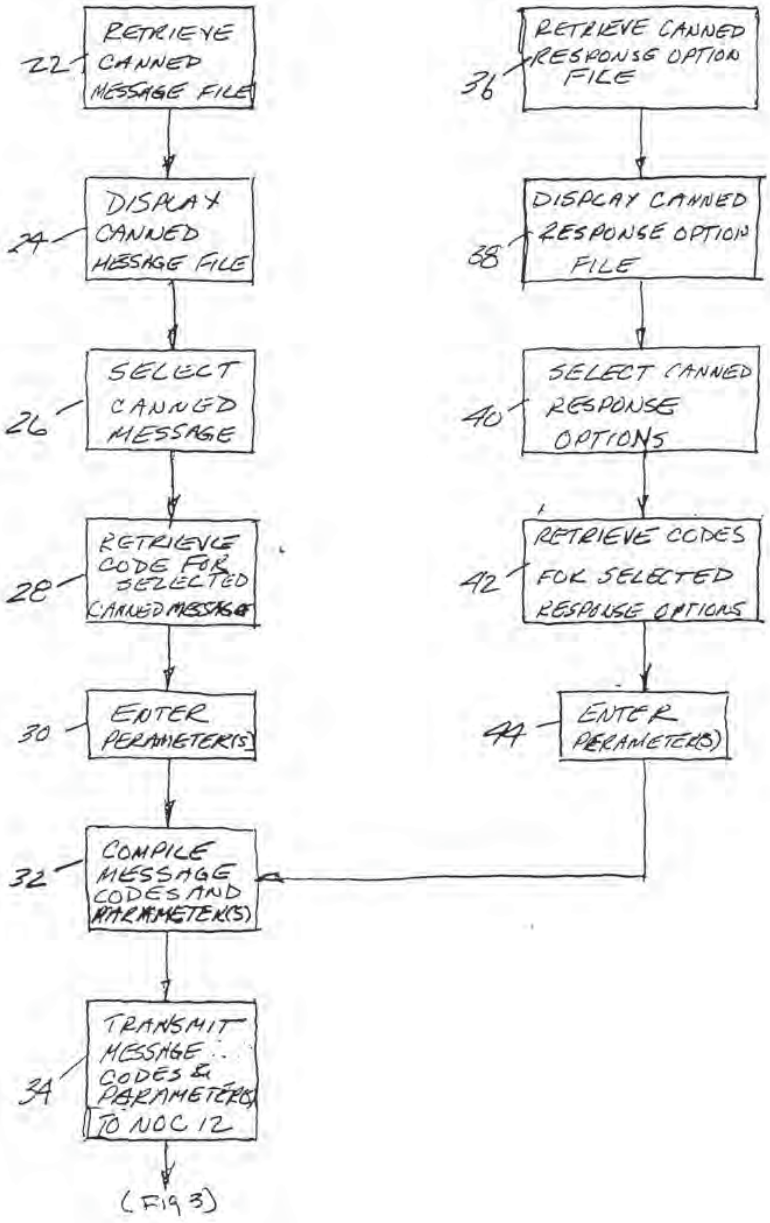

22
RETRIEVE CANNED MESSAGE FILE
24
DISPLAY CANNED MESSAGE FILE
26
SELECT CANNED MESSAGE
28
RETRIEVE CODE FOR SELECTED CANNED MESSAGE
30
ENTER PERAMETER(S)
32
COMPILE MESSAGE CODES AND PARAMETER(S)
34
TRANSMIT MESSAGE CODES & PARAMETERS TO NOC 12
(FIG 3)
36
RETRIEVE CANNED RESPONSE OPTION FILE
38
DISPLAY CANNED RESPONSE OPTION FILE
40
SELECT CANNED RESPONSE OPTIONS
42
RETRIEVE CODES FOR SELECTED RESPONSE OPTIONS
44
ENTER PERAMETER(S)

FIG. 2

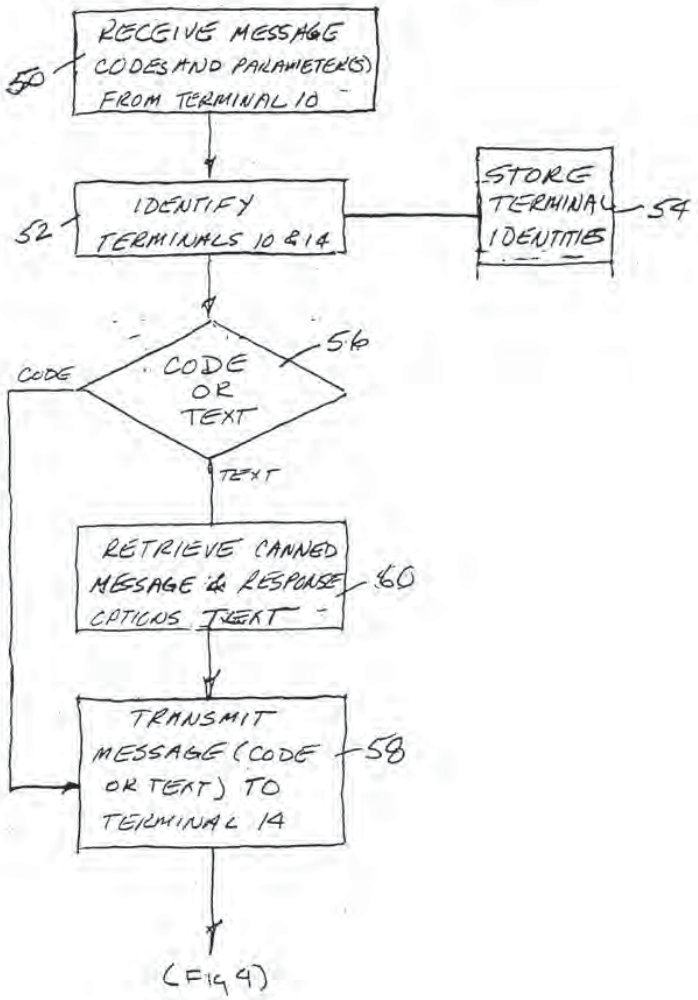

RECEIVE MESSAGE CODES AND PARAMETER(S) FROM TERMINAL 10
50
IDENTIFY TERMINALS 10 & 14
52
STORE TERMINAL IDENTITIES
54
CODE OR TEXT
56
CODE
TEXT
RETRIEVE CANNED MESSAGE & RESPONSE CATIONS TEXT
60
TRANSMIT MESSAGE (CODE OR TEXT) TO TERMINAL 14
58
(FIG 4)

FIG 3

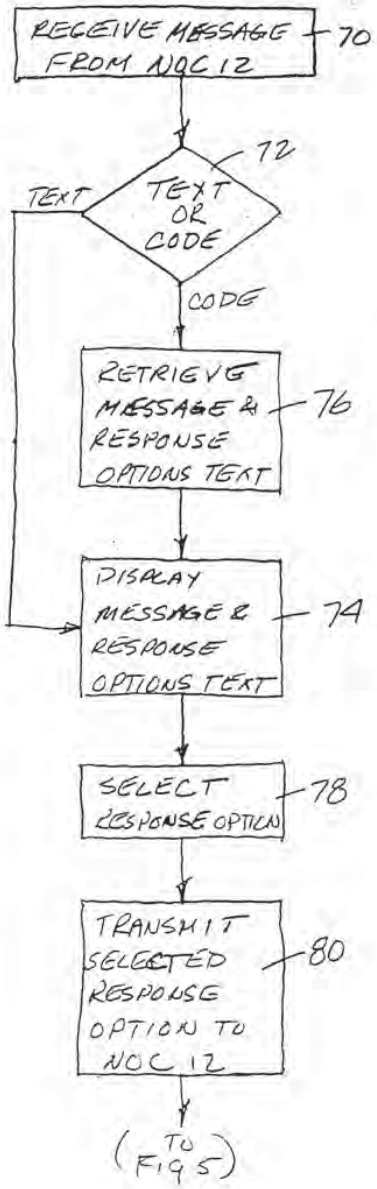

RECEIVE MESSAGE FROM NOC 12
70
72
TEXT OR CODE
TEXT
CODE
RETRIEVE MESSAGE & RESPONSE OPTIONS TEXT
76
DISPLAY MESSAGE & RESPONSE OPTIONS TEXT
74
SELECT RESPONSE OPTION
78
TRANSMIT SELECTED RESPONSE OPTION TO NOC 12
80
(TO FIG 5)

FIG. 4.

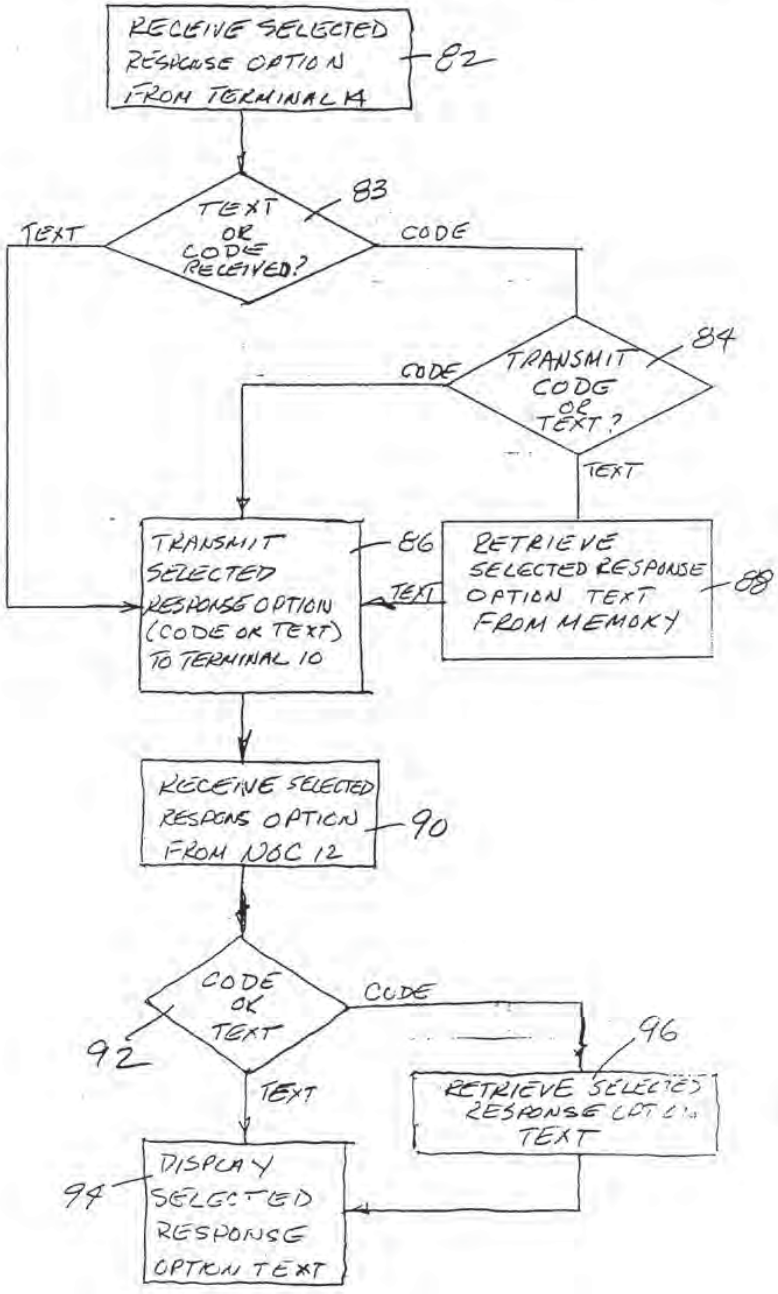

RECEIVE SELECTED RESPONSE OPTION FROM TERMINAL 14
82
TEXT OR CODE RECEIVED?
83
TEXT
CODE
TRANSMIT CODE OR TEXT?
84
CODE
TEXT
TRANSMIT SELECTED RESPONSE OPTION (CODE OR TEXT) TO TERMINAL 10
86
RETRIEVE SELECTED RESPONSE OPTION TEXT FROM MEMORY
88
TEXT
RECEIVE SELECTED RESPONS OPTION FROM NOC 12
90
CODE OR TEXT
92
CODE
TEXT
96
RETRIEVE SELECTED RESPONSE OPTION TEXT
DISPLAY SELECTED RESPONSE OPTION TEXT
94

Fig 5

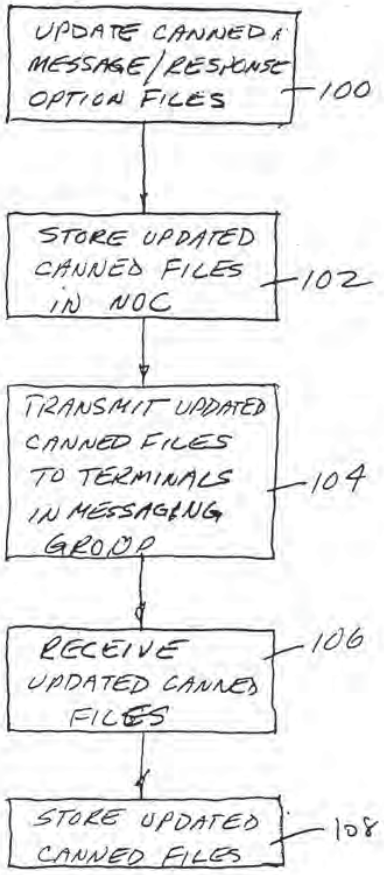
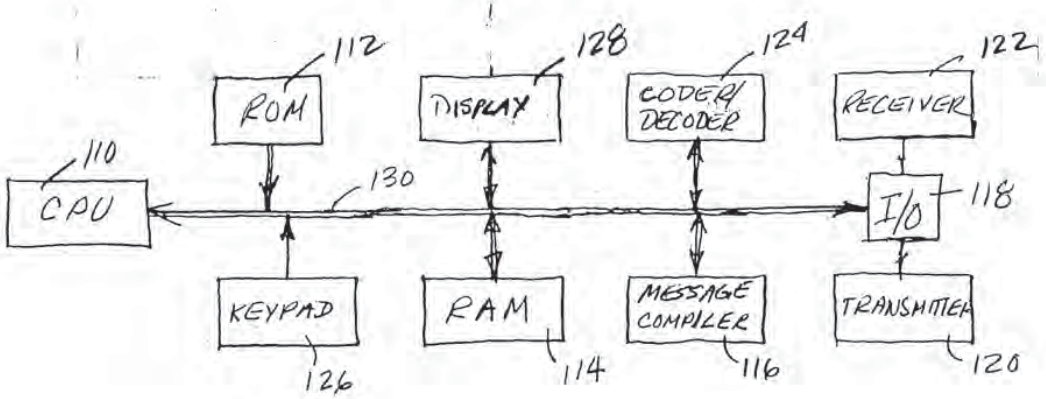

UPDATE CANNED MESSAGE/RESPONSE OPTION FILES
100
STORE UPDATED CANNED FILES IN NOC
102
TRANSMIT UPDATED CANNED FILES TO TERMINALS IN MESSAGING GROUP
104
RECEIVE UPDATED CANNED FILES
106
STORE UPDATED CANNED FILES
108

Fig 6

Fig 7.



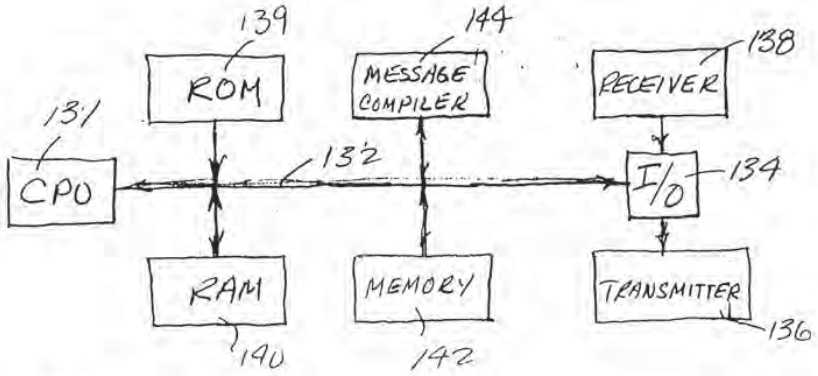


Fig 8

08/708696

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Tsang

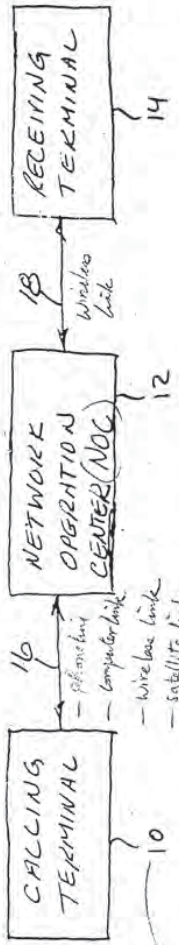

FIG 1

PRINT OF D WINGS
AS ORIGI Y FILED

08/708696

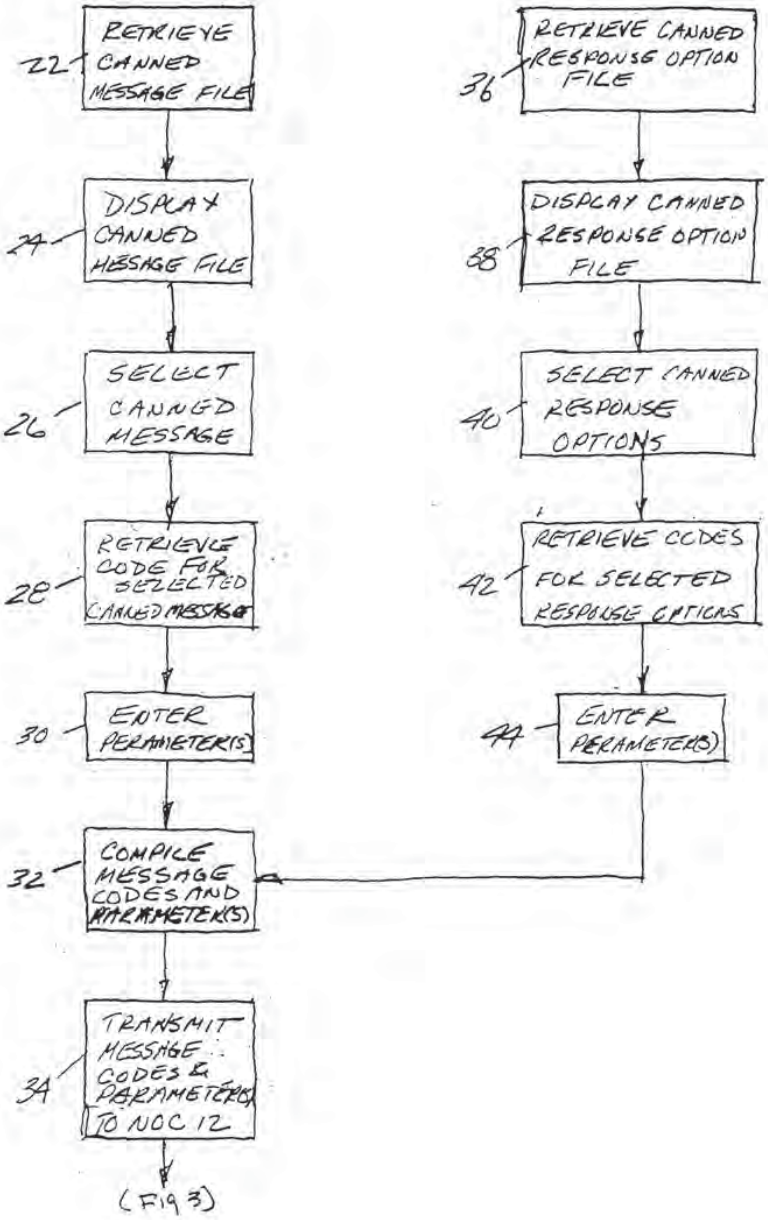

Fig 2

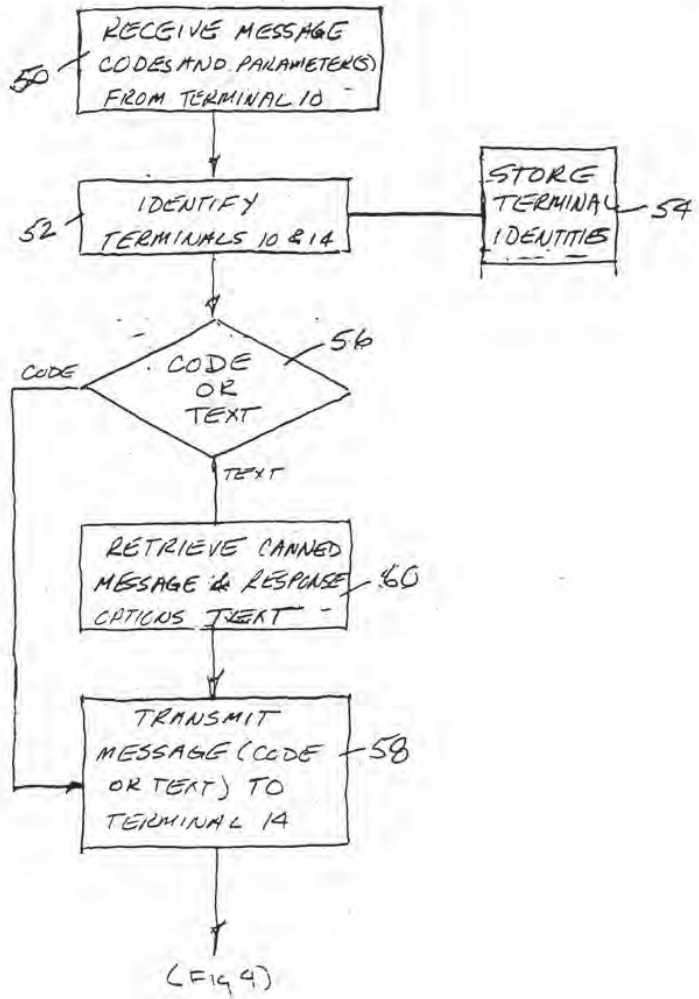

Fig 3

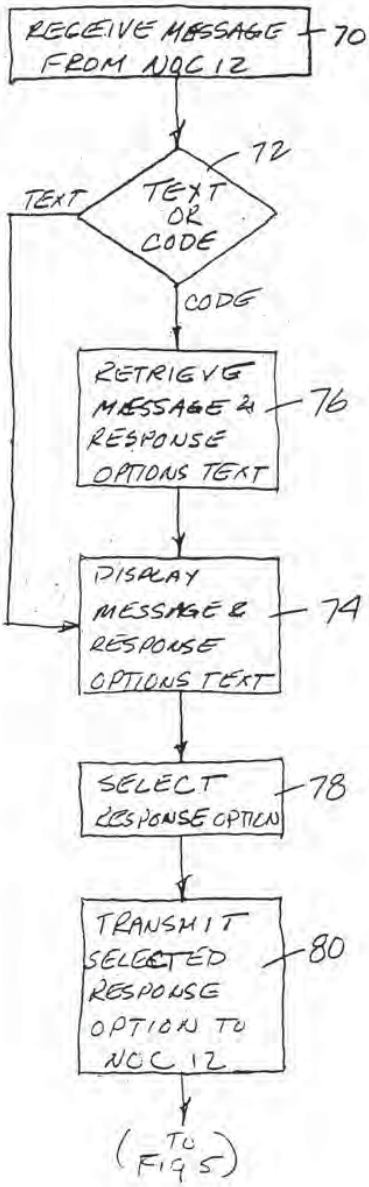

Fig. 4.

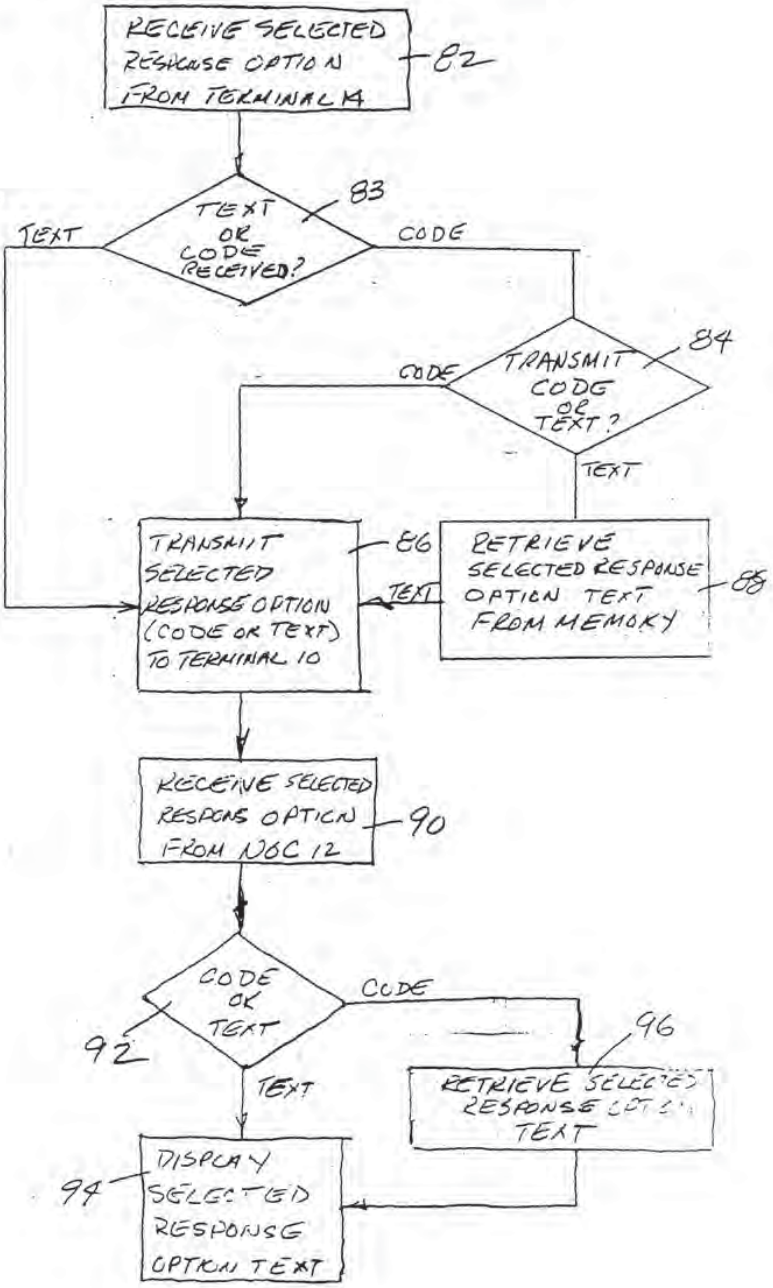

Fig 5

PRINT OF DRAWINGS AS ORIGINALLY FILED

08/708696

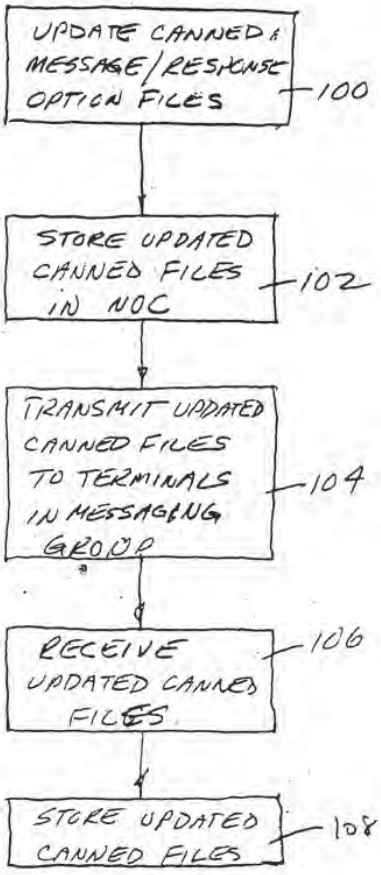

Fig 6

PRINT OF DRAWINGS
AS ORIGINALLY FILED

08/708696

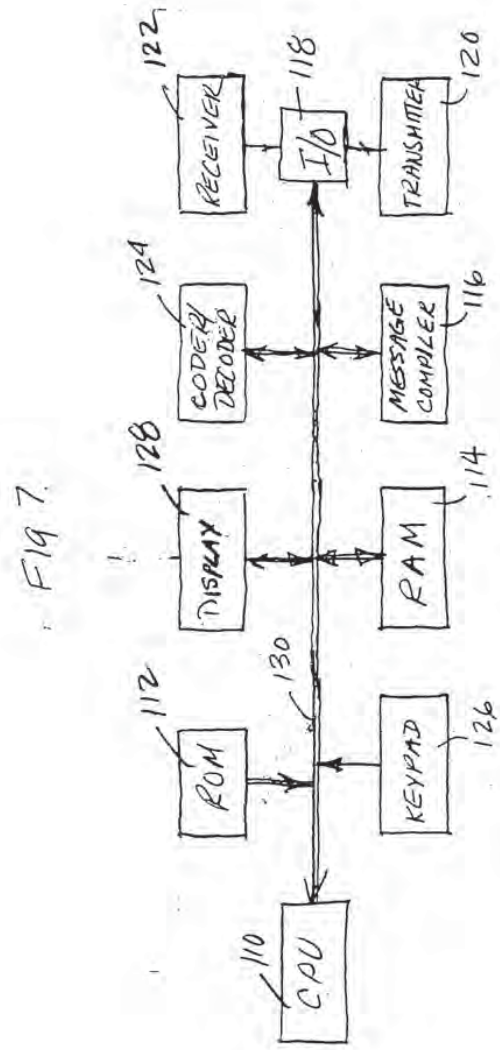

FIG 7.

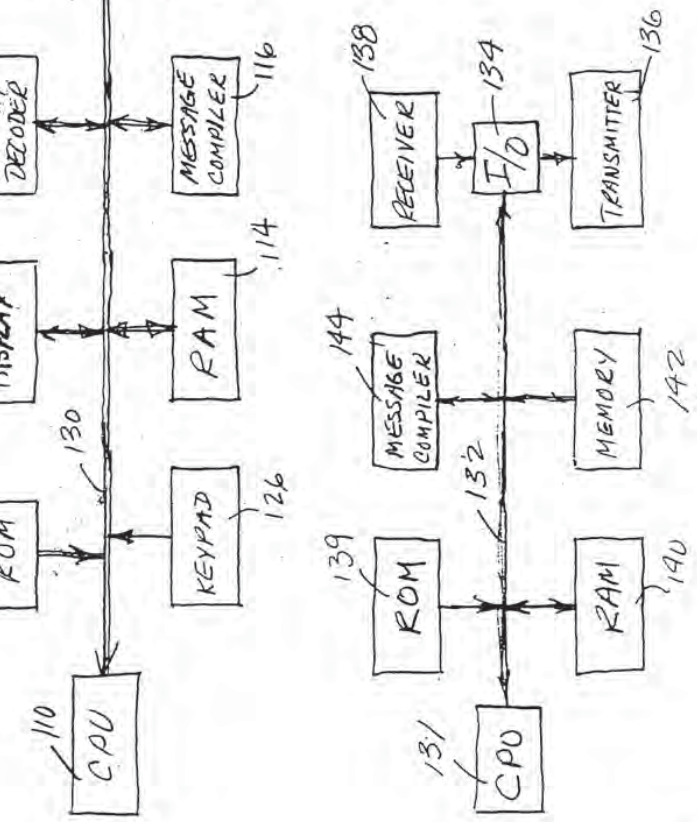

FIG 8

Attorney Docket No. 03680.0132-00000

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that: my residence, post office address and citizenship are as stated below next to my name; I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: METHOD AND APPARATUS FOR GENERATING AND COMMUNICATING MESSAGES BETWEEN SUBSCRIBERS TO AN ELECTRONIC MESSAGING NETWORK the specification of which [X] is attached and/or [ ] was filed as United States Application Serial No. _____ on _____ and was amended on _____ (if applicable); or was filed as PCT International Application Number _____ on _____ and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, § 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, § 119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

COUNTRY (if PCT indicate PCT)	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 35 USC 119
			[ ] Yes [ ] No
			[ ] Yes [ ] No
			[ ] Yes [ ] No
			[ ] Yes [ ] No
			[ ] Yes [ ] No
			[ ] Yes [ ] No

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56 which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application:

U.S. APPLICATIONS			STATUS (Check one)		
U.S. APPLICATION NUMBER	U.S. FILING DATE		PATENTED	PENDING	ABANDONED
PCT APPLICATIONS DESIGNATING THE U.S.					
PCT APPLICATION NO	PCT FILING DATE	U.S. SERIAL NUMBER ASSIGNED (if any)			

I hereby appoint the following attorney and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. **FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P., Reg. No. 22,540**; Douglas B. Henderson, Reg. No. 20,291; Ford F. Farabow, Jr., Reg. No. 20,630; Arthur S. Garrett, Reg. No. 20,338; Donald R. Dunner, Reg. No. 19,073; Brian G. Brunsvold, Reg. No. 22,593; Tipton D. Jennings, IV, Reg. No. 20,645; Jerry D. Voight, Reg. No. 23,020; Laurence R. Hefter, Reg. No. 20,827; Kenneth E. Payne, Reg. No. 23,098; Herbert H. Mintz, Reg. No. 26,691; C. Larry O'Rourke, Reg. No. 26,014; Albert J. Santorelli, Reg. No. 22,610; Michael C. Elmer, Reg. No. 25,857; Richard H. Smith, Reg. No. 20,609; Stephen L. Peterson, Reg. No. 26,325; John M. Romary, Reg. No. 26,331; Bruce C. Zotter, Reg. No. 27,680; Dennis P. O'Reilley, Reg. No. 27,932; Allen M. Sokal, Reg. No. 26,695; Robert D. Bajefsky, Reg. No. 25,387; Richard L. Stroup, Reg. No. 28,478; David W. Hill, Reg. No. 28,220; Thomas L. Irving, Reg. No. 28,619; Charles E. Lipsey, Reg. No. 28,165; Thomas W. Winland, Reg. No. 27,605; Basil J. Lewris, Reg. No. 28,818; Martin I. Fuchs, Reg. No. 28,508; E. Robert Yoches, Reg. No. 30,120; Barry W. Graham, Reg. No. 29,924; Susan Haberman Griffen, Reg. No. 30,907; Richard B. Racine, Reg. No. 30,415; Thomas H. Jenkins, Reg. No. 30,857; Robert E. Converse, Jr., Reg. No. 27,432; Clair X. Mullen, Jr., Reg. No. 20,348; Christopher P. Foley, Reg. No. 31,354; John C. Paul, Reg. No. 30,413; Roger D. Taylor, Reg. No. 28,992; David M. Kelly, Reg. No. 30,953; Kenneth J. Meyers, Reg. No. 25,146; Carol P. Einaudi, Reg. No. 32,220; Walter Y. Boyd, Jr., Reg. No. 31,738; Steven M. Anzalone, Reg. No. 32,095; Jean B. Fordis, Reg. No. 32,984; Barbara C. McCurdy, Reg. No. 32,120; James K. Hammond, Reg. No. 31,964; Richard V. Burgujian, Reg. No. 31,744; J. Michael Jakes, Reg. No. 32,824; and Robert A. Cahill, Reg. No. 20,557. Please address all correspondence to **FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.**, 1300 I Street, N.W., Washington, D.C. 20005, Telephone No. (202) 408-4000.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

FULL NAME OF FIRST INVENTOR	INVENTOR'S SIGNATURE	DATE
Gregory J. Pinter	Gregory J. Pinter	7/16/96
RESIDENCE		COUNTRY OF CITIZENSHIP
203 Haddon Circle, Brandon, MS 39042		U.S.A.
POST OFFICE ADDRESS		
203 Haddon Circle, Brandon, MS 39042		
FULL NAME OF SECOND INVENTOR	INVENTOR'S SIGNATURE	DATE
RESIDENCE		COUNTRY OF CITIZENSHIP
POST OFFICE ADDRESS		

Application Assignment Record

According to the application transmittal letter, an assignment recording ownership was filed with this application; however, a copy of this record was not located in the original file history record obtained from the United States Patent and Trademark Office. Upon your request, we will attempt to obtain the assignment documents from the Assignment Recordation Branch of of the United States Patent and Trademark Office or from a related application case (if applicable). Please note that additional charges will apply for this service.

UNITED STATE EPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
08/708,696	09/05/96	PINTER	G 03650.0132

EXAMINER

LM61/0226

FINNEGAN HENDERSON FARABOW GARRETT AND DUNNER
1300 I STRET N W
WASHINGTON DC 20005

ART UNIT	PAPER NUMBER
2742	2

DATE MAILED: 02/26/98

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

OFFICE ACTION SUMMARY

☐ Responsive to communication(s) filed on _____

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-21 is/are pending in the application.
Of the above, claim(s) _____ is/are withdrawn from consideration.
☒ Claim(s) 8-14 is/are allowed.
☒ Claim(s) 1-7, 15-21 is/are rejected.
☐ Claim(s) _____ is/are objected to.
☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
☐ The specification is objected to by the Examiner.
☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.
☐ received in Application No. (Series Code/Serial Number) _____.
☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of Reference Cited, PTO-892
☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
☐ Interview Summary, PTO-413
☐ Notice of Draftperson's Patent Drawing Review, PTO-948
☐ Notice of Informal Patent Application, PTO-152

--SEE OFFICE ACTION ON THE FOLLOWING PAGES--

PTOL-326 (Rev. 9/96) ★ U.S. GPO: 1996-421-832/40206

DETAILED ACTION

Drawings

1. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the means recited on claims 15-21 (e.g. memory, receiver, retrieving means and transmitter recited on claim 15, and memory, retrieving means, display, selecting means and transmitter recited on claim 19, and message compiler recited on claim 21) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Claim Rejections - 35 USC § 112

3. Claim 16 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 15 recites that the retrieved canned message in text form is transmitted to the receiving terminal. However, the dependent claim 16 recites that it is the code of the message being transmitted to the receiving terminal. This leads to

confusion because it is not clear if the message itself, or the code of the message, or both are transmitted to the receiving terminal.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

5. Claims 1, 2, 19 and 20 are rejected under 35 U.S.C. § 102(b) as being anticipated by Wolff et al, U.S.Patent No.5327486 (hereinafter Wolff).

Regarding claim 1 and 19, Wolff discloses a method of communication messages between subscribers to an electronic messaging network, comprising:

maintaining, at a network operation center (PTM 12, Fig.1), a first file of canned messages (pre-recorded messages stored in PTM12, column 5, lines 57-61) and message codes (Wolff inherently has the claimed message codes because the called party of Wolff can select a message on the PTM by activating a key stroke

(column 6, line 18) from a remote computer) respectively assigned to the canned messages;

maintaining at a first terminal (21, Fig.1) of a first subscriber a second file (Fig.8) of canned messages corresponding to the first file;

selecting (step 58, Fig.3) an appropriate canned message from the second file for transmission to a second terminal (the terminal of the caller) of a designated second subscriber (caller);

sending the message code assigned to the selected canned message to the network operation center;

retrieving the selected canned message from the first file using the message code receiving from the first terminal; and

communicating the selected canned message to the second terminal (columns 5-6).

Regarding claim 2, see the modification feature on Fig.8.

Regarding claim 20, see column 6, line 42 (variable parameters).

6. Claims 15-17 are rejected under 35 U.S.C. § 102(e) as being anticipated by Inniss et al, U.S.Patent No.5539808 (hereinafter Inniss).

Inniss discloses a network operation center (12 and 18 in Fig.1) comprising a memory, a receiver, means responsive to the

received message code for retrieving from the memory the canned message assigned thereto; and a transmitter (Figs 2-5 and columns 5-9).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolff in view of Shibayama et al, U.S.Patent NO.5381466 (hereinafter Shibayama).

Wolff as applied to claim 2 above differs from claim 3 in that Wolff does not disclose that the second terminal (caller's terminal) has a display. However, Shibayama discloses a terminal with a display for receiving a voice message and then converting the received voice message to a text message (Fig.3D and Fig.9). Since voice-to-text message conversation is old and well known in the art, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wolff by including a display in the second terminal such that the received

message can be displayed as a text message to the second user. The modification allows the message receiver to read the message.

Regarding claim 4, see Wolff, column 6, line 42.

Allowable Subject Matter

9. Claims 5-7, 18 and 21 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Claims 8-14 are allowed.

11. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 5-7, 18 and 21, prior art fail to disclose the feature of selecting one of the multiple response options at the second terminal, communicating the selected response option to the network center, routing the option from the network center to the first terminal, and displaying the selected response option at the first terminal.

Regarding claims 8-14, prior art fail to teach a network center with a first file, a first terminal with a second file and a second terminal with a third file.

Conclusion

12. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 308-9051, (for formal communications intended for entry)

Or:

(703) 308-5403 (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fan Tsang whose telephone number is (703)305-4895. The examiner can normally be reached on Monday to Friday from 8.30 AM to 6.00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Krista Zele, can be reached on (703) 305-4701. The fax phone number for this Group

is (703) 308-5403.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [**krista.zele@uspto.gov**].

All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Fan Tsang
Primary Examiner
Group 2742
February 18, 1998

TO SEPARATE, HOLD TOP AND BOTTOM EDGES, SNAP–APART AND DISCARD CARBON

FORM PTO-892 (REV. 2-92) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	SERIAL NO.	GROUP ART UNIT	ATTACHMENT TO PAPER NUMBER
NOTICE OF REFERENCES CITED	08/708,696	2742	2
	APPLICANT(S) Pinter		

U.S. PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	NAME	CLASS	SUB-CLASS	FILING DATE IF APPROPRIATE
	A	5539808	Jul 1996	Inniss et al.	379	67	
	B	5327486	Jul 1994	Wolff et al.	379	210	
	C	5381466	Jan 1995	Shibayama et al.	379	88	
	D						
	E						
	F						
	G						
	H						
	I						
	J						
	K						

FOREIGN PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUB-CLASS	PERTINENT SHTS. DWG	PERTINENT PP. SPEC.
	L								
	M								
	N								
	O								
	P								
	Q								

OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

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EXAMINER	DATE
Tan Tsay	2/18/98

* A copy of this reference is not being furnished with this office action. (See Manual of Patent Examining Procedure, section 707.05 (a).)

GBU 2742
$

Attorney Docket No. 03680.0132

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Gregory J. PINTER

Serial No.: 08/708,696 — Group Art Unit: 2742

Filed: September 5, 1996 — Examiner: F. Tsang

For: METHOD AND APPARATUS FOR GENERATING AND COMMUNICATING MESSAGES BETWEEN SUBSCRIBERS TO AN ELECTRONIC MESSAGING NETWORK

Assistant Commissioner for Patents
Washington, D.C. 20231

TRANSMITTAL LETTER

Sir:

Enclosed is a response to the Office Action of February 26, 1998. The items checked below are appropriate:

[X] Applicant hereby petitions for a two-month extension of time to respond to the above Office Action. The fee of $400.00 for the Extension is enclosed.

The claims are calculated below:

	Claims Remaining After Amendment		Highest Number Previously Paid	Present Extra	Rate	Additional Fee
Total	21	-	21		x $ 22	$
Indep.	5	-	4	1	x $ 80	$ 80
[ ] First Presentation of Multiple Dep. Claim(s)					+ $260	
					Subtotal	$
					Reduction by ½ if small entity	-
					TOTAL	$ 80

[X] A fee of $ 80.00 to cover the cost of the additional claims added by this response is enclosed.

LAW OFFICES
FINNEGAN, HENDERSON,
FARABOW, GARRETT
& DUNNER, L.L.P.
300 I STREET, N.W.
WASHINGTON, D.C. 20005
202-408-4000

[X] A fee of $ 240.00 to cover the cost filing an Information Disclosure Statement under 37 C.F.R. 1.97(c).

[X] A check for $ 720.00 to cover the above fees are enclosed.

To the extent any further extension of time under 37 C.F.R. § 1.136 is required to obtain entry of this response, such extension is hereby respectfully requested. If there are any fees due under 37 C.F.R. §§ 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. § 1.136, please charge such fees to our Deposit Account No. 06-0916.

Respectfully submitted,

Date: July 24, 1998

By: _____

John M. Romary
Reg. No. 26,331
FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.
1300 I Street, N.W.
Washington, D.C. 20005-3315
(202) 408-4000

LAW OFFICES
FINNEGAN, HENDERSON,
FARABOW, GARRETT
& DUNNER, L.L.P.
1300 I STREET, N.W.
WASHINGTON, D.C. 20005
202-408-4000

Attorney Docket No. 03680.0132

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

#3 Req EXT(2) + Amdt A

In re Application of:	)	
Gregory J. PINTER	)	
Serial No.: 08/708,696	)	Group Art Unit: 2742
Filed: September 5, 1996	)	Examiner: F. Tsang
For: METHOD AND APPARATUS FOR GENERATING AND COMMUNICATING MESSAGES BETWEEN SUBSCRIBERS TO AN ELECTRONIC MESSAGING NETWORK	)	

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

AMENDMENT

In response to the Office Action of February 26, 1998, the period of response to which extends through July 27, 1998 (July 26 being a Sunday) by filing a petition for a two-month extension of time included herewith, please amend the application as follows:

07/27/1998 SSANDARA 00000102 060916 08708696
02 FC:116 400.00 OP
03 FC:102 2.00 CH 80.00 OP

IN THE CLAIMS

Please cancel claim 21 without prejudice or disclaiming the subject matter thereof and amend claims 1, 15, 16, and 19 as follows:

1. (Amended) A method of communicating messages between subscribers to an electronic messaging network, comprising the steps of:

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1300 I STREET, N. W.
WASHINGTON, D. C. 20005
202-408-4000

maintaining, at a network operation center, a first file of canned messages and message codes respectively assigned to the canned messages;

maintaining at a first terminal of a first subscriber a second file of canned messages corresponding to the first file;

selecting an appropriate canned message from the second file for transmission to a second terminal of a designated second subscriber;

sending the message code assigned to the selected canned message to the network operation center;

retrieving the selected canned message from the first file using the message code received from the first terminal;

determining whether the second terminal can receive the canned message in a text form or message code form; and

communicating the selected canned message to the second terminal in either message code form or text code form in response to the determination.

15. (Amended) A network operation center for use in an electronic messaging network, comprising:

a memory storing a file of canned messages in text form, each canned message having a unique, abbreviated message code assigned thereto;

a receiver for receiving a message code from a calling terminal included in the network;

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NEGAN, HENDERSON,
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& DUNNER, L.L.P.
1300 I STREET, N.W.
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means responsive to the received message code for retrieving from the memory the canned message assigned thereto;

means for determining whether a receiving terminal in the network can receive the canned message in text form or message code form; and

a transmitter for transmitting the retrieved canned message in text form or message code form in response to the determining means [to a receiving terminal included in the network].

16. (Amended) The network operation center defined in claim 15, [further including means for determining whether to transmit the canned message to the receiving terminal in text or message code form, said] the determining means routing the received message code directly to the transmitter upon determination [to transit the canned message in code form to] that the receiving terminal can receive the canned message in message code form.

19. (Amended) A message terminal for use in an electronic messaging network, comprising:

a memory storing a file of canned messages and message codes respectively assigned thereto and a file of canned multiple response options and response codes respectively assigned thereto;

means for retrieving the file of canned messages and the file of canned multiple response options from the memory;

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NNEGAN, HENDERSON,
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& DUNNER, L.L.P.
1300 I STREET, N. W.
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a display for displaying the canned messages and the multiple response options in the retrieved file;

means for selecting one of the canned messages and at least one of the multiple response options appropriate for the selected canned message for communication to a designated other message terminal; and

a transmitter for transmitting the message code assigned to the selected canned message and the ~~message~~ response code assigned to the at least one multiple response option over a communications link of the network.

Please add claim 22 as follows:

~~22.~~ 21. A message terminal for use in an electronic messaging network, comprising:;

a memory storing a file of canned messages and message codes respectively assigned thereto and a file of canned multiple response options and response codes respectively assigned thereto;

means for retrieving the file of canned messages and message codes from the memory;

a display for displaying the canned messages in the retrieved file;

means for selecting one of the canned messages for communication to a designated other message terminal and for selecting multiple response options appropriate for the selected canned message;

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FINNEGAN, HENDERSON,
FARABOW, GARRETT
& DUNNER, L.L.P.
1300 I STREET, N.W.
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a message compiler for compiling the assigned message code and the response codes assigned to the selected multiple response options into a message for transmission by the transmitter; and

a transmitter for transmitting the message code assigned to the selected canned message over a communications link of the network.

REMARKS

In the Office Action, the Examiner (1) allowed claims 8-14; (2) rejected claims 1, 2, 19, and 20 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,327,486, issued to Wolff et al.; (3) rejected claims 15-17 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,539,808, issued to Inniss et al.; (4) rejected claim 16 under 35 U.S.C. § 112, second paragraph; (5) rejected claims 3 and 4 under 35 U.S.C. § 103(a) as being unpatentable over Wolff et al. in view of U.S. Patent No. 5,381,466, issued to Shibayama; (6) objected to claims 5-7, 18, and 21 as being dependent upon a rejected base claim, but otherwise allowable; and (7) objected to the drawings under 37 C.F.R. 1.83(a).

Applicant has amended claims 1 and 19 to clarify the invention further, and amended claims 15 and 16, overcome the rejection of claim 16 under 35 U.S.C. § 112, second paragraph. In addition, applicants have canceled claim 21 and added claim 22 to recite the allowable subject matter of claim 21.

Applicant respectfully traverses the Examiner's objections to the drawings under 37 C.F.R. 1.83(a) for the following reasons. The Examiner contends that several of the

LAW OFFICES
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.
1300 I STREET, N.W.
WASHINGTON, D.C. 20005
202-408-4000

elements recited in claims 15-21 are not shown in the drawings. Fig. 8 shows a structural embodiment of the network operation center (NOC) in accordance with the invention, as recited in claim 15. In this embodiment, the NOC includes a memory (RAM 140) for storing canned messages, a receiver 138, a transmitter 136, and a message compiler 144. Also included in this embodiment are a CPU 131 and a ROM 149. As described in the specification and recognized by those skilled in the art, CPU 131 and ROM 149 inherently provide the means for selecting and the means for retrieving, recited in claims 15 and 18, respectively.

Fig. 7 shows a structural embodiment of a calling terminal in accordance with the invention. In this embodiment, the calling terminal includes a memory (RAM 114) for storing a file of canned messages, a message compiler 116, a display 128, a transmitter 120 as recited in claim 18. Further, the means for selecting, for purposes of this embodiment, may be equated with keypad 126 alone or in combination with CPU 110 and ROM 112. Finally, contrary to the Examiner's objection, the message compiler of claim 21 is clearly depicted by element 116. For at least these reasons, Applicant asserts that the drawings comply with 37 C.F.R. 1.83(a).

Applicant respectfully traverses the rejection of claims 1, 2, 19 and 20 under § 102(b) in view of Wolff et al for the following reasons. Claim 1 recites a method of communicating between subscribers. The method comprises a combination of steps, including:

> maintaining, at a network operation center, a first file of canned messages and message codes respectively assigned to the canned messages;

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FINNEGAN, HENDERSON,
FARABOW, GARRETT
& DUNNER, L.L.P.
1300 I STREET, N.W.
WASHINGTON, D.C. 20005
202-408-4000

maintaining at a first terminal of a first subscriber a second file of canned messages corresponding to the first file;

determining whether the second terminal can receive the canned message in a text form or message code form; and

communicating the selected canned message to the second terminal in either message code form or text code form in response to the determination.

In contrast, Wolff et al. does not disclose the combination of steps recited in claim 1 including, at least, "determining whether the second terminal can receive the canned message in a text form or message code form; and communicating the selected canned message to the second terminal in either message code form or text code form in response to the determination."

The Examiner contends that Wolff et al. inherently includes codes assigned to its messages. Wolff et al., however, merely stores a series of prerecorded messages that a user can select and send to another. Wolff et al. discloses that a message selected by a user is placed in a packet and the entire message packet is transmitted and converted to speech so that the receiving party can appreciate its contents. [See Col. 5, lines 7-27]. This disclosure is distinguishable from assigning a message code to a canned message, determining whether a receiving terminal can receive a code associated with the message, and communicating the message in code or text format in accordance with the determination, as described in claim 1. For at least this reason, Wolff et al. does not recite each and every element in claim 1, and therefore can not anticipate this claim.

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FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.
1300 I STREET, N.W.
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Applicant also traverses the rejection of claims 19 and 20 under 102(b) for the following reasons. Wolff et al. does not disclose the combination of elements including, at least, "a memory storing a file of canned messages and message codes respectively assigned thereto and a file of canned multiple response options and response codes respectively assigned thereto;" and "means for selecting one of the canned messages and at least one of the multiple response options appropriate for the selected canned message for communication to a designated other message terminal." As the Examiner has stated, none of the cited references discloses "selecting one of the multiple response options" and "communicating the selected response option to another terminal" through the network center. [See Office Action, page 6, lines 12-15].

Because Wolff et al. does not recite each and every element of claims 1 and 19, this reference cannot anticipate these claims, and therefore the rejection under § 102(b) should be withdrawn. Claims 2 and 20, at least by virtue of their dependence on claims 1 and 19, respectively, are also allowable over the reference.

Applicant respectfully traverses the rejections of claims 3 and 4, because Shibayama, in any reasonable combination with Wolff et al., does not make up for the deficiencies of Wolff et al. alone. Shibayama does not disclose or suggest, at least, the step of determining recited in claims 3 and 4 by virtue of their dependence on claim 1. For at least this reason, the rejection under § 103(a) should be withdrawn.

Applicant also respectfully traverses the rejections of claims 15-17 under § 102(e) for following reason. Claim 15 recites a combination of elements including "a receiver for receiving a message code from a calling terminal included in the network;"

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FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.
1300 I STREET, N.W.
WASHINGTON, D.C. 20005
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"means for determining whether a receiving terminal in the network can receive the canned message in text form or message code form, and a transmitter for transmitting the retrieved canned message in text form or code form in response to the determining means."

Inniss et al., in contrast, does not disclose the combination of elements including, among other things, the determining means recited in claim 15. Instead, Inniss et al. merely discloses allowing the user to create an audio message and forwarding the message to the receiving user. After creation of the message, the system disclosed in Inniss et al. attempts to deliver the message to the receiving user. If the message is valid the delivery is successful. If, on the other hand, the message is invalid (*i.e.*, the receiving unit cannot process the message) an error message is returned and the sending user has the option of either (1) recreating the message; (2) rerouting the message; or (3) terminating the delivery attempt. [Col. 5, line 54 - Col. 6, line 6].

The present invention, as recited in claim 15, prevents this type of trial and error by determining, prior to transmission, whether a receiving terminal can actually receive a shortened message code or whether the entire text message must be delivered. Inniss et al., therefore, does not disclose, at least, determining whether the receiving party can receive a message code or text and then transmit the message in text or code form based upon the determination, as recited in claim 15. Moreover, there is no disclosure of suggestion in the reference for modifying its disclosure to recite the combination of elements recited in amended claim 15.

LAW OFFICES
NEGAN, HENDERSON,
ARABOW, GARRETT
& DUNNER, L.L.P.
1300 I STREET, N.W.
SHINGTON, D.C. 20005
202-408-4000

Applicant respectfully requests the withdrawal of the rejection under §102 (e), because Inniss et al. fails to disclose each and every element recited in claim 15. Further, claims 16 and 17, at least by virtue of their dependence on claim 15, are also allowable over the cited reference.

In view of the foregoing amendments and remarks, applicant requests that the Examiner withdraw the rejections under §102(b), §102(e), and §103 and allow the pending claims.

Applicant also requests that all the documents listed in the accompanying Information Disclosure Statement be considered and made of record. The Examiner's attention is particularly directed toward U.S. Patent Nos. 4,263,480 and 4,336,524 issued to Levine, each of which discloses "prestored limited content messages," but which, applicant respectfully submits, do not disclose the invention of the present application.

LAW OFFICES
INNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.
1300 I STREET, N.W.
WASHINGTON, D.C. 20005
202-408-4000

To the extent any extension of time under 37 C.F.R. 1.136 is required to obtain entry of this response, such extension is hereby requested. If there are any fees due under 37 C.F.R. 1.16 or 1.17 which are not enclosed, including any fees required for an extension of time under 37 C.F.R. 1.136, please charge those fees to our Deposit Account No. 06-916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.

By: _____
John M. Romary
Reg. No. 26,331

Dated: July 24, 1998

LAW OFFICES
GAN, HENDERSON,
ABOW, GARRETT
DUNNER, L. L. P.
0 I STREET, N. W.
NGTON, D. C. 20005
02-408-4000

Attorney Docket No. 03680.0132

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

#4

In re Application of:

Gregory J. PINTER

Serial No.: 08/708,696 — Group Art Unit: 2742

Filed: September 5, 1996 — Examiner: F. Tsang

For: METHOD AND APPARATUS FOR GENERATING AND COMMUNICATING MESSAGES BETWEEN SUBSCRIBERS TO AN ELECTRONIC MESSAGING NETWORK

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. § 1.97(c)

Pursuant to 37 C.F.R. §§ 1.56 and 1.97(c), applicant brings to the attention of the Examiner the documents listed on the attached PTO 1449. This Information Disclosure Statement is being filed after the events recited in Section 1.97(b) but, to the undersigned's knowledge, before the mailing date of either a Final Action or a Notice of Allowance. Under the provisions of 37 C.F.R. § 1.97(c), this Information Disclosure Statement is accompanied by a fee of $240.00 as specified by Section 1.17(p).

07/27/1998 SSAMDARA 00000102 060916 08708696
01 FC:126 240.00 OP

Copies of the listed documents are attached.

Applicant respectfully requests that the Examiner consider the listed documents and indicate that they were considered by making appropriate notations on the attached form.

This submission does not represent that a search has been made or that no better art exists and does not constitute an admission that each or all of the listed documents are

LAW OFFICES
INNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.
1300 I STREET, N.W.
WASHINGTON, D.C. 20005
202-408-4000

material or constitute "prior art." If the Examiner applies any of the documents as prior art against any claims in the application and applicant determines that the cited documents do not constitute "prior art" under United States law, applicant reserves the right to present to the office the relevant facts and law regarding the appropriate status of such documents.

Applicant further reserves the right to take appropriate action to establish the patentability of the disclosed invention over the listed documents, should one or more of the documents be applied against the claims of the present application.

If there is any fee due in connection with the filing of this Statement, please charge the fee to our Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.

By: _____
John M. Romary
Reg. No. 26,331

Date: July 24, 1998

LAW OFFICES
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.
1300 I STREET, N.W.
WASHINGTON, D.C. 20005
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OMB No. 0651-0011

JUL 24 1998

INFORMATION DISCLOSURE CITATION
(Use several sheets if necessary)

PAGE 1 of 2

4

Atty. Docket No.	03680.0132-0	Serial No.	08/708,696
Applicant	Gregory J. PINTER		
Filing Date	September 5, 1996	Group	2742

U.S. PATENT DOCUMENTS

Examiner Initial*		Document Number	Date	Name	Class	Sub Class	Filing Date If Appropriate
T-T		2,978,676	04/04/61	J. A. Spencer	340	154	
T-T		3,513,443	02/27/67	V. Andersen	340	164	
T-T		3,714,375	01/30/73	H. A. Stover	179	2	
T-T		3,818,145	06/18/74	J. R. Hanway	179	41	
T-T		3,846,783	11/05/74	S. P. Apsell et al	340	311	
T-T		3,851,251	11/26/74	W. K. Wigner et al	325	55	
T-T		3,944,724	03/16/76	J. S. Kilby et al	178	4.1	

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Sub Class	Translation Yes or No

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

T-T	"New Radio Paging System," by Mitsuru Komura et al, Japan Telecommunications Review, July 1977, Vol. 19, No. 3, pps. 217 and 220-225
T-T	"Paging System Broadcasts Nationwide on FM Radio Channel," Electronics International, January 4, 1979, Vol. 52, No. 1, pps. 67-68
T-T	"A Development Project of a Pocketsize Receiver for a Nationwide Paging System," by Kari Kiiskinen et al, IEEE, 1979, pps. 383-387

Examiner	Date Considered 9/18/98

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form PTO 1449 — Patent and Trademark Office - U.S. Department of Commerce

OMB No. 0651-0011

INFORMATION DISCLOSURE CITATION
(Use several sheets if necessary)

Atty. Docket No.	03680.0132-0	Serial No.	08/708,696
Applicant	Gregory J. PINTER		
Filing Date	September 5, 1996	Group	2742

U.S. PATENT DOCUMENTS

Examiner Initial*		Document Number	Date	Name	Class	Sub Class	Filing Date If Appropriate
FT		3,976,995	08/24/76	G. Sebestyen	340	337	
FT		3,984,775	10/05/76	L. Cariel et al	325	55	
FT		4,010,460	03/01/77	J. DeRosa	340	311	
FT		4,010,461	03/01/77	T. Stodolski	340	311	
FT		4,160,240	07/03/79	P. Partipilo	340	311	
FT		4,178,475	12/11/79	F. D. Taylor et al	179	2	
FT		4,197,526	04/08/80	A. B. Levine	340	311	
FT		4,249,165	02/03/81	T. Mori	340	311	
FT		4,263,480	04/21/81	A. B. Levine	179	2	
FT		4,330,780	05/18/82	M. Masaki	340	825.44	
FT		4,336,524	06/22/82	A. B. Levine	340	311	
FT		4,382,256	05/03/83	K. Nagata	340	825.44	

		Document Number	Date	Country	Class	Sub Class	Translation Yes or No

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

Examiner		Date Considered	9/18/98

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form PTO 1449 — Patent and Trademark Office - U.S. Department of Commerce

New Radio Paging System

By Mitsuru Komura*, Akira Yokokura*,
Tadatoshi Hagihira** and Masanori Ogasawara***

ENGINEERING BUREAU, NTT*
ATSUTA CONTROLLING RADIO TERMINAL STATION, NTT**
AOMORI CONTROLLING RADIO TERMINAL STATION, NTT***

Since the Pocket Bell radio paging service in Japan was inaugurated in 1968, it has been extended to 49 areas with a total of approximately 600,000 subscribers. The demand for Pocket Bell service is also expected to increase largely hereafter.

To meet the demand in the future, NTT has developed a new radio paging system which uses a new frequency band. Many improvements, such as reduction in receiver size and weight, considerable extension in battery life, increase in subscriber capacity per radio channel, etc. have been made. This new radio paging system has many advanced technical features, such as new digital signaling technique, carrier frequency off-set technique for simultaneous transmission from base stations, use of one large scale integrated circuit for the entire decoding function of a receiver, etc. Commercial tests of this new system will commence in the end of 1977. This paper describes outline and features of the radio paging system.

1. Introduction

Utility of the "Pocket Bell" radio paging service, which makes it possible to call a person who is out of his office and to contact him at any time at very low charge, has been so widely accepted that service has extended to 49 areas with a total of approximately 600,000 subscribers, as shown in Fig. 1, since the service was commenced in the Tokyo area in 1968. Subscriber occupations vary widely, from salesmen to physicians. The demand for this paging service is foreseen to continue increasing hereafter.

To meet the demand, NTT has developed a new radio paging system. It can accommodate 30,000 subscribers per radio channel, using the new frequency band. Many improvements, such as reduction in receiver size and weight, considerable extension in battery life, selection function for two alerting tone levels, economical composition of trunks and registers using XB switch, and so on have been made.

Field tests on the new paging system using the prototype equipment were carried out successfully in Tokyo in 1976. Service involving the new system will start in Tokyo and Sapporo areas in the end of 1977, as commercial tests.

2. System Features

The new radio paging system has many advanced technical features as follows, compared with the conventional system.

(1) High Capacity

This system can accommodate 30,000 subscribers per radio channel, at a two calls per day calling rate. This is realized by shortening selective calling signal duration per call to one third, using newly developed high speed digital signaling technique.

(2) Reduction in Receiver Size and Weight

The new receiver size and weight are largely reduced by using a C-MOS LSI as decoder, UM-3 dry battery as power supply and a miniaturized switch for power, reset on alerting, selection of alerting levels. It is about 70% of the volume and the weight of the existing receiver, measuring 97 mm × 37 mm × 18 mm and weighing less than 100 grams.

More than 97% calling reliability is expected in a service area boundary by triple transmission of a selective calling signal per call.

(7) Receiver Battery Life

A UM-3 dry cell (1.5V, 450 mAH) can be used for more than 2 months by the battery saving function, assuming 8 hour operation, 2 calls per day.

(8) New Functions

(a) 2 alerting ringing tone audio levels

The alerting ringing tone can be switched at two levels, to prevent disturbing people around a called person in a quiet place.

(b) Dual Call

A receiver may be equipped with dual address. There are two kinds of intermittent alerting tones whose intervals differ, to discriminate between called addresses.

A list of characteristics and functions is shown in Table 1.

4. Radio Propagation Characteristics

Radio paging system propagation tests were carried out in the 150, 250, 400 and 800 MHz bands in Tokyo in 1975. Test results showed that the 150 to 400 MHz bands were applicable for the paging service under almost the same conditions and that there was slight difficulty regarding propagation loss, cost etc. in the 800 MHz band.

Distance vs. median field strength characteristics in the 250 MHz band are shown in Fig. 3 and field strength distribution on the street in Fig. 4 according to propagation test results. Building penetrating losses

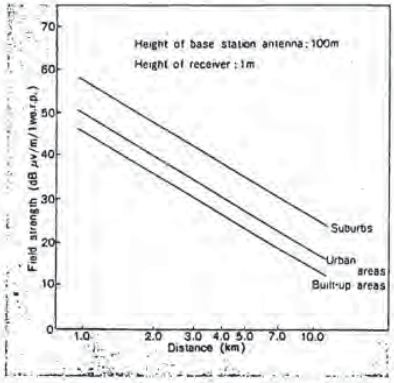


Figure 3. Distance vs. median field strength

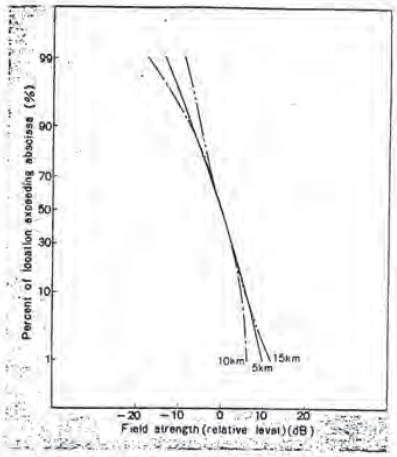


Figure 4. Field strength distribution on the street

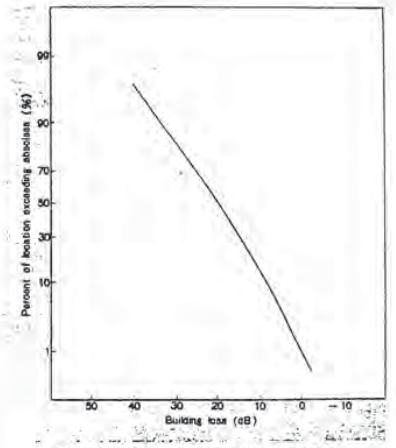


Figure 5. Building loss in the 250 MHz band

Table 2. Building Losses in the 250 MHz Band

Minimum	Maximum	Average	Standard Deviation
6 dB	35 dB	19.7 dB	8.6 dB

in the 250 MHz band are shown in Table 2 and Fig. 5. These losses equal the difference between the median field strength outside of the building and that on the first floor within the building. As building penetrating losses vary widely, due to the size and the structure of the building, Table 2 and Fig. 5 are based on results from tests in various kinds of building. As the total propagation characteristics in the 250 MHz band are near those of the 150 MHz band, the service area of the 250 MHz system is almost the same as the 150 MHz system.

5. Signaling System

The new system uses NRZ digital signal, instead of the selective calling signal of two sequential double tones used by the conventional system. Comparison between tone and digital selective-call signaling systems is shown in Table 3. According to Table 3, a binary digital selective-call signaling system is advantageous, from view points of receiver size and accommodating capacity.

5.1 Signal Composition

The signal composition used in the new system is shown in Fig. 6. All receivers are divided into 15 groups. Selective calling signals for a receiver in a group are sent only for a corresponding duration to the group, for receiver battery saving. A synchronizing signal and a maximum of eight selective calling signals are sent for each group. A 31 bit synchronizing signal is composed of 9 bit synchronizing signal, 15 bit frame synchronizing signal and 7 bit group indicating signal.

(1) Bit Synchronizing Signal

This signal is used in order to synchronize the inner clock of a receiver to that of a received signal.

(2) Frame Synchronizing Signal

This signal indicates the position of selective calling signals and uses a 15 bit PN code, which is the same signal sent for each group.

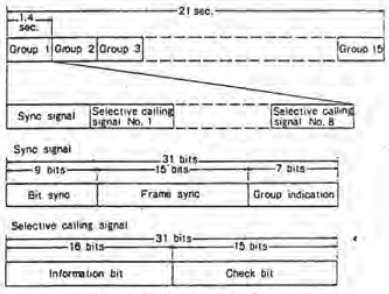


Figure 6. Signal composition

Table 3. Comparison between Tone and Digital Selective Calling Signal System

Terms		Multi-Frequency Tone Signaling System	Digital Signaling System	Note
Calling Reliability	Sensitivity in the Rayleigh Field	○	○	By adopting a suitable error correction in a digital signaling system
	Sensitivity in the Interference Area	○	○	
Occupation Band-Width and Channel Separation		○	○	
Multiple Simultaneous Transmission from Base Stations		○	○	By adopting the new off-set carrier frequency technique in a digital signaling system
New Functions	Dual Calling	○	○	
	Battery Saving	○	○	
Possibility of Reduction in Decoder Size		△	○	Active filter for tone signaling system is larger, even using RC elements
System Cost		○	○	
Increase in Subscriber Capacity in the Future		△	○	

(3) Group Indicating Signal

This signal identifies a group and uses a 7-bit BCH code composed of 4 information bits and 3 check bits.

(4) Selective Calling Signal

A selective calling signal in the system is a 31-bit BCH code composed of 16 bits for information and 15 bits for check, which is capable of correcting one bit.

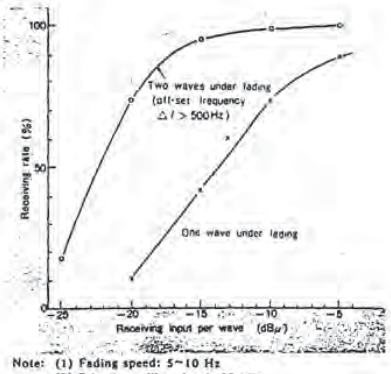
5.2 Carrier Frequency Off-Set Technique

Simultaneous transmission from several base stations in the radio paging system is important to cover a wide service area, which involves no problem in multi-frequency tone signaling systems. However, it was difficult in a binary digital paging system, because beat carriers degrade the receiving rate in an interference area where radio fields from more than 2 transmitters are nearly equal. Therefore, the new carrier frequency off-set technique has been developed. It has been made clear that, if the frequency difference between carriers is larger than the bit clock frequency of a selective calling signal, more than one cycle of a carrier beat can be received in a receiver for a duration of one bit and the selective calling signal receiving rate does not reduce. Off-set frequency vs. receiving rate is shown in Fig. 7. Moreover, a space diversity effect can be obtained by the carrier off-set technique in the interference area, as shown in Fig. 8. In the new system, five frequencies (f_0, f_0 ±250 Hz and f_0 ±500 Hz) are provided for transmitting, where f_0 is central frequency in the 250 MHz band, considering stability of transmitting frequency, channel seperation and so on.

5.3 Automatic Delay Equalizing Technique

Phase error of modulating signals from base stations cause a degradation in receiving rate in an interference area. Phase error vs. receiving rate for selective calling signals is shown in Fig. 9. If a transmission line from a central base station to a satellite base station is a metallic line, it is only neccessary to equalize the transmission line delay, using the fixed delay circuits. However, if it is a carrier transmission circuit, a variable delay equalizer which automatically follows delay shift is necessary. The automatic delay equalizing system adopted in the new system is described in the following.

The phase monitor in the central base station continuously monitors the phase of signals returned from each satellite stations. If it detects a delay shift, the encoder stops transmitters at all satellite stations and sends pre-determined pattern signals for delay



Note: (1) Fading speed: 5~10 Hz
(2) Selective calling signal: 23 bits
(3) Transmission rate: 250 bits/sec.
(4) Complete delay equalizing of two base stations

Figure 8. Digital signal system calling reliability in interference area

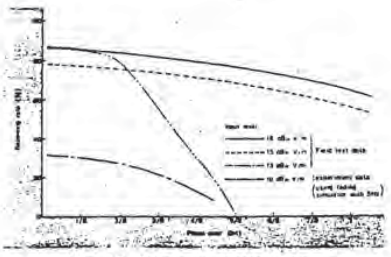


Figure 9. Phase error vs. receiving rate

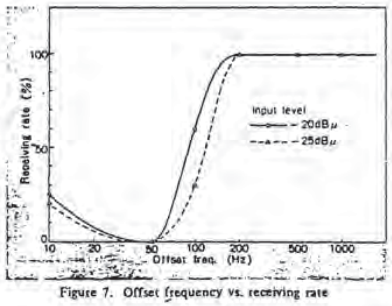


Figure 7. Offset frequency vs. receiving rate

equalizing to each satellite station, using both radio and telecommunications line. At each station, the phase compensator receives the pattern signals and executes delay equalization. During this time, service is discontinued. However, there is no service degrading because only a short time, within several seconds, is involved. None of the calls during this time are deleted but are stored.

6. Equipment Outline

The major components of the new radio paging system are paging terminal equipment, phase compensators, radio transmitters, antennas and receivers.

6.1 Paging Terminal Equipment

The paging terminal equipment is composed of trunks, a register link, registers, a subscriber number check circuit, an encoder and a phase monitor.

(1) Trunk and Register

Trunks selected from the telephone network are switched to registers by register link.

Trunks relay MF signals corresponding to the called number from telephone networks to registers and send either a recorded announcement or a busy tone to a caller, according to the information from the subscriber number check circuit through registers. Registers receive and store the subscriber number and send it to the subscriber number check circuit.

(2) Subscriber Number Check Circuit

Subscriber number check circuit consists of check circuit and pin-board translator. The pin board translator receives a called number from the check circuit and sends back subscriber information. The check circuit checks the subscriber information. If the information is valid, normalized subscriber number is sent to the encoder, and if not, a number unobtainable signal is sent to the register.

(3) Encoder

This consists of a signal converter unit and an encoder unit.

The signal converter transfers the subscriber number to the binary code and sends the corresponding memory to the group.

The encoder composes the complete selective calling signal of a binary digital BCH code. Moreover, the encoder continuously sends such signals as synchronizing signals, selective calling signals and dummy calling signals when there is no call. The memory stores the number until each selective calling signal is transmitted three times at intervals of about 20 seconds. The encoder also controls delay equalizing according to phase monitor requirements.

(4) Phase Monitor

The phase monitor sends selective calling signals to each base station and continuously monitors signals returned from each base station. If any delay shift is detected in the returned signals, the monitor requires delay equalizing to the encoder.

6.2 Phase Compensator

The phase compensator at each station sends selective calling signals from the encoder at the central base station to a radio transmitter, and returns them to the central base station. The phase compensator also equalizes delay between base stations, according to the control signals from the encoder.

6.3 Radio Transmitter

This all solid-state transmitter transmits selective calling signals from the phase compensator. Considering the installation in the satellite base station, it is designed to be remotely monitored and controlled. There is one stand-by transmitter for every four main transmitters. In order to ensure a frequency offset, the transmitter has a high-stability crystal oscillator. Principal transmitter performance specification are as follow.

(1) Transmitting Power : 250 W
(2) Frequency : 250 MHz band
(3) Modulation : Frequency shift keying
(4) Frequency Deviation : ±2.5 kHz
(5) RF Frequency Tolerance : Less than $\pm 2 \times 10^{-7}$
(6) Power Supply : DC −21V or DC −48V
(7) Alarms : Transmitting power, antenna mismatching, power supply,

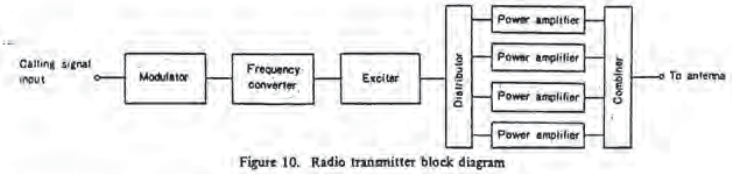


Figure 10. Radio transmitter block diagram

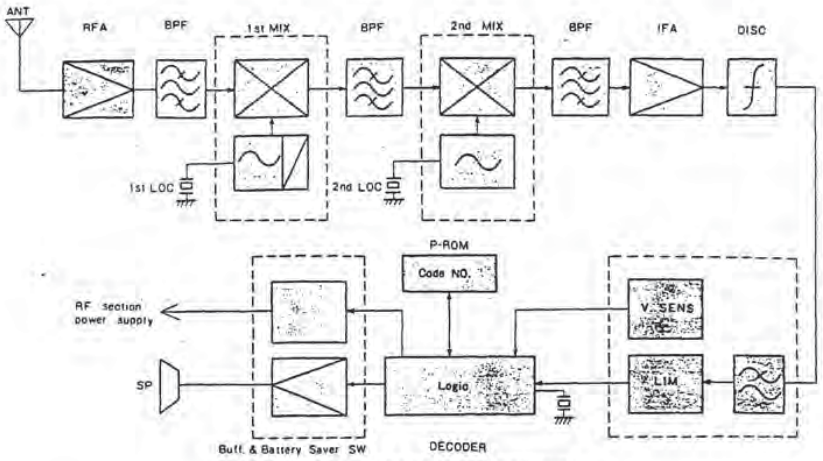


Figure 11. New pocket bell receiver blockdiagram

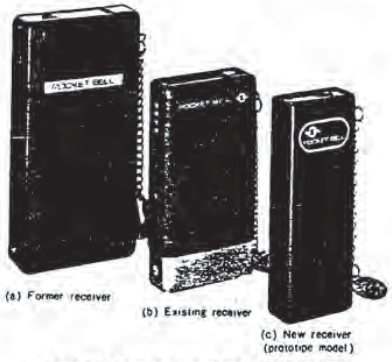


Figure 12. Exterior views of pocket bell receivers

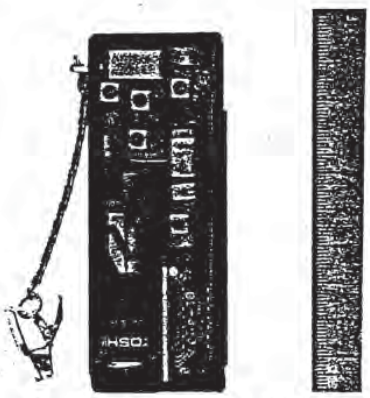


Figure 13. Interior view of new pocket bell receiver

line, modulation, etc.

A blockdiagram of the transmitter is shown in Fig. 10.

6.4 Receiver

Principle receiver performance specifications are as follow.

(1) Double superheterodyne receiver in the 250 MHz band.

(2) The pocket bell number is memorized in an exclusive ROM.

(3) Power supply is one 1.5V UM-3 size dry cell. Battery life is more than 2 months, by adopting battery saving.

Table 4. Radio Transmitting Antenna

Type	Construction	Frequency	Gain
1	Co-linear	250 MHz bands	3 dB
2	Dipole with plane reflector	250 MHz bands	3 dB
3	Dipole with 90° corner reflector	250 MHz bands	7 dB
4	Co-linear	150 MHz and 250 MHz bands	3 dB
5	6 elements, log-periodic	150 MHz and 250 MHz bands	3 dB
6	22 elements, log-periodic	150 MHz and 250 MHz bands	7 dB

(4) Dimensions are 97 mm x 37 mm x 18 mm and weight is less than 100 grams.
(5) New facilities are dual call, 2 alerting ringing tone levels and single alerting by three times calling.

A blockdiagram of the receiver is shown in Fig. 11. External and internal views are shown in Fig. 12 and Fig. 13, respectively.

6.5 Antenna

Six types of antennas listed in Table 4 were designed for the new radio paging service.

7. Conclusion

Commercial tests on this new radio paging system will start in Tokyo and Sapporo areas in the end of 1977. Dual call function is expected to be introduced several years hence.

8. Acknowledgment

The authors greatly appreciate the contributions of the engineers of Nippon Electric Co., Matsushita Communication Industrial Co. and Tokyo Shibaura Electric Co., who engaged in the design and manufacture of the equipment.

Reference

(1) N. Mino, Y. Yamada: "Pocket Bell" Personal Signaling Service, JTR, Vol. 7, No. 4, 1965.
(2) M. Kimura, C. Nakamura: "Pocket Bell" Radio Paging Service, JTR, Vol. 11, No. 4.
(3) Y. Kikuchi, S. Sada: A Small-Sized Pocket Bell Receiver, JTR, Vol. 14, No. 3.

Electronics international

Significant developments in technology and business

Paging system broadcasts nationwide on fm radio channel

System broadcasts over Sweden's existing network; commercial service performs a variety of tasks

The Swedish penchant for solitude—immortalized by Greta Garbo's "I vant to be alone"—suggests that Sweden is a most unlikely place for a nationwide personal paging system. But the Swedish Telecommunications Administration, Televerket, has launched just such a system, using the existing fm radio network for signal transmission.

Known as MBS (for *mobilsoekning*, mobile searching), the system has been in planning for almost 10 years. Now the first subscribers have signed up and bought pocket page receivers. Televerket operates the service, which cost $1.5 million to develop and install, on a purely commercial basis.

It charges a one-time sign-up fee of $23, plus a quarterly fee that ranges from $15 to $85, depending on the type of paging service required. There is a charge of about 7 cents—the cost of two local phone calls—for each paging. In addition, the subscriber purchases a pocket receiver for about $900.

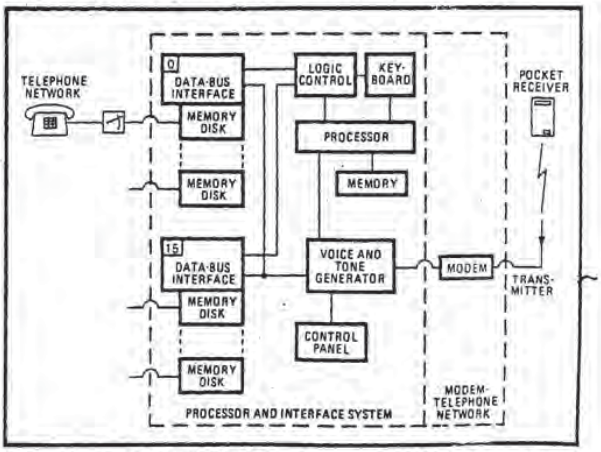
Recycled. Setting up a transmission network dedicated solely to paging would have been economically prohibitive in thinly populated Sweden: 8 million Swedes are spread out across a nation the size of the state of California. So Televerket decided to use the 87-to-104-megahertz band of the fm radio network, which covers some 99% of the nation's geography, as well as some of Denmark and Norway.

Political approval for use of the existing fm radio transmission system was easier to obtain than might have been expected. Televerket handles transmission of all programs broadcast by the Swedish Broadcasting Corp., the sole radio and television broadcasting company in the nation. Three channels, called programs, are broadcast over fm, all of them stereo. For the paging system, Televerket uses the third program, which plays popular music.

According to Oesten Maekitalo, who heads Televerket's Radio Laboratory, a major problem in using the fm band for transmitting additional information was finding a way to modulate the signal without interfering with existing stereo program reception. Televerket's solution was to add an extra subcarrier in the fm broadcast transmissions.

The frequency of the paging subcarrier is 57 kilohertz (±6 hertz) and the frequency deviation caused by the subcarrier is ±3 kHz. When paging signals are transmitted simultaneously with stereo programs, the 57-kHz subcarrier is phase-locked to the 19-kHz stereo multiplexed pilot signal.

Each 52-bit paging code consists of two blocks of 16 information bits and 10 parity check bits. To broadcast a subscriber's code, the paging subcarrier is product-modulated by a signal obtained by phase-modulating a 1.187-MHz (±0.1-Hz) tone with differentially coded binary informa-



Paging. After caller dials in subscriber's code, it is converted into a 52-bit binary code by the central processor. Code is used to modulate the paging subcarrier.

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tion. A 1 in the original binary information causes a phase shift of 180°, while a 0 means unaltered phase.

Televerket offers seven different paging services—from the simplest—transmission of an audio or visual paging signal—to the most sophisticated, in which the caller's number is displayed on a light-emitting-diode display on the receiver.

In the middle is a system that enables a caller to dial the subscriber's paging number and then dial in the number for the subscriber to call back. The caller's phone number, which is stored in a central computer for two hours, is repeated to the subscriber in synthesized voice form when he dials the central exchange. Another option is a privacy code that prevents unauthorized callers from paging the subscriber.

Getting in touch. To page someone, the caller dials a four-digit entry number, then the subscriber's six-digit number. If the subscriber has additional services, such as the call-back display or a privacy code, the caller then dials in these digits.

The signals from the telephone network are sent to a central processor, a Motorola M/6800, over a data bus interface and a logic controller, which checks and processes all incoming calls and calls in progress. There are 15 data-bus interface units in the system nationwide, each equipped with disk memory. After processing, the information is sent through modems to transmitters located throughout the nation.

Receivers. At the subscriber's end, the receiver scans the 87-to-104-MHz frequency range every 10 seconds. It is designed so that it automatically tunes in for reception of a radio paging call by searching for and locking onto the special MBS system identification code. This feature is necessary because third program transmission is on various frequencies in different areas.

The first manufacturer to gain Televerket's type approval on a receiver is Japan's Mitsubishi Electric Corp. The Mitsubishi receiver has a complementary-metal-oxide-semiconductor microprocessor with programs stored in a C-MOS programmable read-only memory. An LED readout displays up to 12 digits for subscribers who opt for the call-back feature. Expected to gain type approval soon are Sonab of Sweden and Salora of Finland. □

West Germany

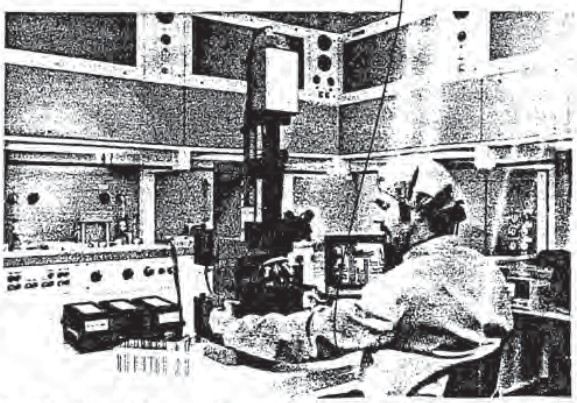
Intermetall GmbH goes it alone in developing very large-scale integration

In their anxiety to keep up with the U. S., government after government in Europe is helping semiconductor firms prepare for the very large-scale integration technology of the 1980s. So when a company gets set for VLSI without government financial help, the effort becomes noteworthy.

One such company is Intermetall GmbH, lead house of the ITT Semiconductors Group, based in Freiburg, West Germany. Probably the only semiconductor producer in Europe that has thus far financed its VLSI efforts entirely on its own, the group has dished out more than $13 million during the past two years to get itself into harness for the future. Additionally, some $5 million to $7 million are currently being spent for further VLSI projects.

Facilities. In the group's new six-story research and development facility, centers for computer design, mask making, and diffusion stand ready for the challenges of VLSI design and fabrication. "For our VLSI activities we have installed the latest research, development, and production equipment available on world markets," says Heinz Rössle, group general manager for ITT Semiconductors worldwide. The lineup includes modern data-processing gear for circuit design, a new electron-beam system for mask making, and equipment for processing 4-inch wafers—all installed in super-clean environments.

In the design center, a model 400 Prime Computer is being used in an approach that, says Rössle, should halve VLSI development time, even when circuits become more complex and exhibit increasingly higher levels of integration. Because the computer takes on an active role in circuit design, Rössle prefers to call the approach "computer design" instead of the conventional computer-aided



Clean job. Inspector checks circuit in super-clean environment of mask-making center at ITT Semiconductors' new research and development facility in Freiburg, West Germany.

CONFERENCE: Proceedings of the 29th. Electronic Components Conference, Cherry Hill, NJ, USA (14-16 May 1979)

A DEVELOPMENT PROJECT OF A POCKETSIZE RECEIVER FOR A NATIONWIDE PAGING SYSTEM

Kari Kiiskinen*
Juhani Horto**
Eero Järvinen**

*Salora Oy, Hybrid Technology Department
Salorankatu 5-7, SF-24100 Salo 10, Finland

**Technical Research Centre of Finland
Electronics Laboratory
P.O.Box 181, SF-90101 Oulu 10, Finland

Summary

A nationwide paging system was taken into use in Sweden in 1978. The Radiotelephone Division of Salora Ltd., Finland, has developed a receiver for this system. This paper discusses the most significant aspects of this development project. The main part of the paper deals with the use of hybrid technology in the project.

The system design of the paging receiver is discussed and the results are presented. Because the receiver was realized almost entirely with thick film hybrid circuits, special attention was given to the selection of the thick film materials. The manufacture of hybrid circuits and the receiver itself, and some special aspects of the development project are reviewed. The microprocessor, included in the receiver, and the tasks it performs, are also discussed.

Introduction

A nationwide paging system was taken into use in Sweden in 1978. The system was developed by the Swedish Telecommunications Administration, or Televerket. By utilizing the national telephone and FM-broadcasting networks, the system makes it possible to find a person with a small paging receiver from anywhere in Sweden by dialling from any telephone within the country. The basic system structure is presented in Figure 1. This paging system has been dubbed "MBS" according to "mobilsökning", which means "mobile searching".

At the end of 1977, the Radiotelephone Division of Salora Ltd. in Finland started a project to develop a paging receiver for this system. The schedule of the project was very tight. It was known that at least two competitors, who had started the development work considerably earlier, were also entering the market. From the very beginning of the project, maximal utilization of outside resources was planned with only two full-time persons at the Radiotelephone Division appointed to the project. On developing the logic circuitry and the necessary programs the subcontracts were signed between Salora and the Technical Research Centre of Finland. Salora's thick film hybrid circuit plant was employed to develop part of the hybrid circuits and to prepare the production of all of them.

System Design

The specifications established by Televerket for the MBS receiver, formed the basis of the development project[1]. Some of the main requirements and recommendations are presented in Table 1.

The receiver to be developed differed considerably from the previous products of the Radiotelephone Division. Therefore special emphasis was laid on the system design of the pager[2]. The main effort was put onto easy and rational operation of the relatively complicated equipment. Also some standards on the producibility were laid down.

The most important technological choice of the project was the decision to employ a CMOS-microprocessor, instead of custom-LSI's in realizing the required features of the pager. Another major decision during the system design was to take only one hardware model into production and to make versions for the different service categories of the system by software programs.

Other important decisions during the system design were the utilization of plug-in changeable and rechargeable batteries, and the definition of the mechanical structure and the appearance of the paging equipment.

Electrical Structure

The electrical structure of the Salora MBS Receiver is presented in Figure 2.

Altogether, there are 12 hybrid circuits and two resistor networks in the pager. The electronics of the pager is functionally and mechanically devided into three parts, FM-receiver, data decoder, and data processor, each of which is shielded separately because of noise suppression.

The data processor is the most complex of these three parts. It has been realised with a RCA 1600-microprocessor consisting of a CPU, a 2 kbyte program memory (ROM), a 128 x 8 bit data memory (RAM), two I/O-circuits, a PROM-circuit for the subscriber number and some MSI logic circuits. The processor operates at 2.9 MHz clockfrequency. It takes care of the following tasks:

- performs the testing of the display and the alarm transducer when switching on the power
- controls the searching of a sufficiently strong MBS-transmitter
- synchronizes itself into the incoming data-stream
- does the parity check of the data
- compares the received calling numbers against its own numbers
- strikes an alarm when its own number is identified
- stores into the data memory possible additional information coming in after the call
- controls the display functions
- notices channel holding and battery condition and gives an alarm if required.

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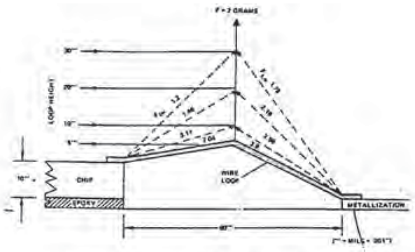

Figure 10. Resolution of forces example # 1.

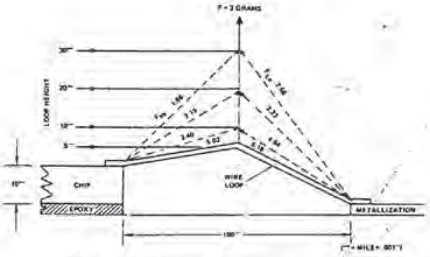

Figure 11. Resolution of forces example # 2.

CONCLUSIONS

The integration of ultrasonic bonding and NDPT has proven to be feasible by the equipment developed, retrofitted and tested under this contract. Test results indicate no degrading of bond quality when safe recommended NDPFs are used. The concepts developed thus far serve as a sound foundation for subsequent self test bonders with totally automated NDPT features which promise to be most cost effective and to eliminate potentially unreliable human/fatigue factors now currently used.

Acknowledgements

The work described in this writing was funded by contract NO-123-77-C-0671. The authors wish to thank C. Caposell of NAVAIR for supporting this project; to G. Harman of NBS for his technical assistance and recommendations throughout this effort; to W. Wing of K&S for refining and implementing the design concepts, and to D. Vilenski of K&S for his technical assistance.

REFERENCES

1. J. W. Slemmons, Rockwell International, Internal Document, 1968.
2. J. W. Slemmons, The Microworld of Joining Technology, American Welding Society 50th Annual Meeting and Welding Exposition, Philadelphia, Pa., April 29 - May 1, 1969.
3. A. P. Bertin, Development of Microcircuit Bond-Pull Screening Techniques, Rome Air Development Center TR 73-123 (General Electric Co., Utica) April 1973.
4. G. G. Harman and C. A. Cannon, the Microelectronic Wire Bond Pull Test – How to use, How to Abuse it, Proceedings, 28th Annual Electronic Components Conference, Anaheim, CA, pp 291- 299.
5. J. Roddy, N. Spann and P. Seese, Nondestructive Bond-Pull In High Reliability Applications, Proceeding, 28th Annual Electronics Components Conference, Anaheim, CA, pp 300 - 326.
6. Recommended Practice for Nondestructive Pull Testing of Wire Bonds (ASTM F 458-78).
7. Stand Methods for Measuring Pull Strengths of Microelectronic Wire Bonds (ASTM F 459-78).
8. B. D. Martin, Design and Use of a Laser Interferometer for Ultrasonic Bonding Studies, Proceedings, 14th Annual Reliability Physics Symposium, Las Vegas, Nevada, pp 82-85.
9. W. T. Fitch, Extended Temperature Cycling of Plastic and Ceramic I/Cs with Thermal Shock Preconditioning, 14th Annual Reliability Physics Symposium, Las Vegas, Nevada, pp 240-247.

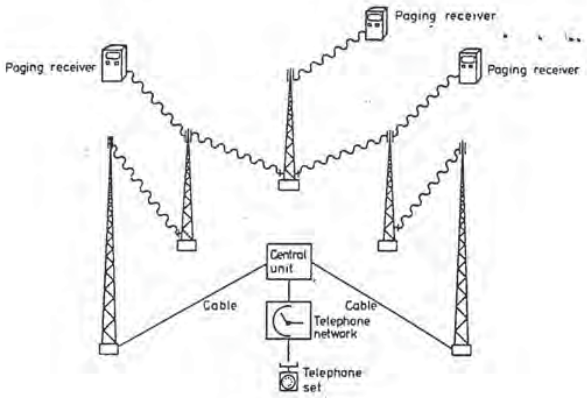

Figure 1. The Swedish "MBS" public radio paging system.

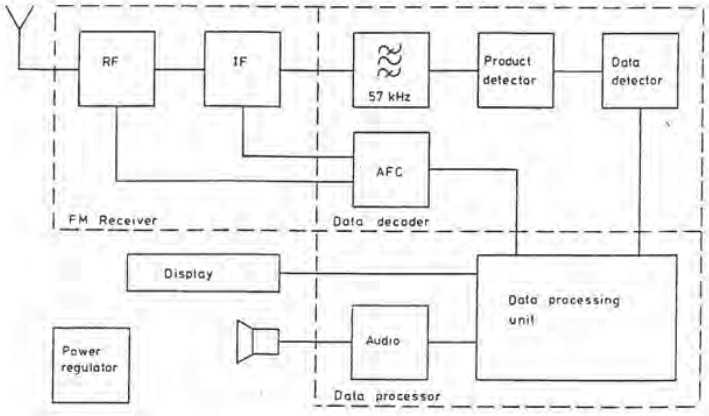

Figure 2. Electrical structure of the Saltsa MBS receiver.

Table 1A. Requirements for the MBS Receiver

	with built-in antenna	intended for connection to external antenna
Frequency range	87 to 104 MHz	87 to 104 MHz
Operational temperature range - portable - installed in vehicle	-10°C to +55°C	-25°C to +55°C
Sensitivity	35 dB(µV/m)	15 dB(µV)emf
Overload	110 dB(µV/m)	106 dB(µV)emf
Selectivity (> ± 1 MHz)	110 dB(µV/m)	106 dB(µV)emf
Intermodulation	80 dB(µV/m)	80 dB(µV)emf

Table 1B. Recommendations for the MBS Receiver

Weight	max. 200 g
Size	max. 140 mm x 60 mm x 22 mm
Operating time without recharging	min. 200 h

Table 2. Properties of the Salora MBS Receiver

	with small batteries	with R6 batteries
Size	110 mm x 65 mm x 19 mm	145 mm x 65 mm x 19 mm
Weight	180 g	240 g
Operating time	150 h	500 h
MBS subscriber number capacity	3	3
Storage capacity for received numbers (calls)	4	4

Material and component selection for hybridization

The main requirements for the thick film materials were:

- suitability for multilayer structures even on larger substrates
- possibility of printing resistors on dielectric layers in some circuits
- solderability, preferably re-solderability of conductors on multilayer structures
- solderability and wire-bondability of conductors in certain circuits.

After several tests and prototyping, palladium/silver and palladium/gold pastes were chosen for the conductor materials. Resistor and dielectric materials were chosen as compatible with the conductor materials.

Because the space did not allow the use of standard dual-in-line components, it was decided to use leadless ceramic chip carriers, although we could not obtain microprocessor components readily packaged in chip carriers from the market. Consequently, we had to do the bonding and the sealing ourselves whilst part of it has been done outside of the company.

We had the following requirements for the ceramic chip carriers:

- the cavity area had to be large enough for microprocessor chips
- the free height inside the carrier had to be high enough to allow 0,5 mm (20 mils) thick chips to be mounted and bonded in the carrier.

All these requirements could be met with the products already available on the market.

Because of space limitations, standard packaged components could be used only in a few cases. Therefore, most of the selected components are minicomponents like SOT-23's, chip capacitors and miniature coils. Integrated circuits are used as naked chips.

Fabrication of hybrid circuits

Hybrid circuits are fabricated in a normal thick film process. Except for the digital part, the circuits are printed on prescribed ceramic substrates.

The tolerance requirements in the printing process are taut because the packaging density is quite high, and there are 8 to 10 printings per circuit on an average. The resistors are air-abrasively trimmed. To attach the components we use manual and reflow soldering, epoxy and chip-and-wire bonding. Because of these various attachment methods and comparatively short production series, the process has been automated only at some few phases.

Results and special aspects of the project

The developed Salora MBS receiver, and its properties, are presented in Figure 1 and Table 2.

Figure 3. The Salora MBS Receiver.

Some of the problems encountered during the project were:

- the combination of hybrid technology and a microprocessor, and the use of new ceramic chip carriers brought many new tasks, like the incoming inspection for the LSI chips, testing the devices after bonding and sealing etc.
- splitting the electronics of the pager with three parts and shielding each of them was due to the difficulty of controlling the noise.
- new techniques like the hybridized microprocessor and the adoption of a "higher state of the art" of the old techniques, required extra studies and new training of the personnel.

Conclusions

The object of the project was to develop a compact pocketsize MBS Receiver, which fully meets the specifications established by the Swedish Telecommunications Administration. For this purpose several alternatives were examined and assessed, both on component and circuit level. Effective use of hybrid technology was necessary to put the electronics of the receiver into the available space. The hybrid technology used, ranges from simple resistor networks to a hybridized microprocessor, with new leadless ceramic chip carriers.

In addition to the required functions, the microprocessor also made possible the inclusion of several extra functions which remarkably facilitate the everyday use of the receiver.

Acknowledgements

The development work was carried out in co-operation with several laboratories. The authors wish to thank the staff of Salora Ltd., Radiotelephone and Hybrid Laboratories, and the staff of the Technical Research Centre of Finland, Electronics Laboratory, for their co-operation and efforts during this project. The authors are also grateful to all persons who helped to complete this paper.

References

1. Televerket, "Paging receiver for the Swedish public radio paging system", Specification 76-16560-2E and its supplement 76-32302-2E, Sweden, 1976.

2. P. Aura, J. Nieminen, "Paging equipment for the national paging system of Sweden", Intelcom '79, Dallas, Texas, USA, 1979.

UNITED S\ :S DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
08/708,696	09/05/96	PINTER	03680.0132

EXAMINER
TSANG, F

ART UNIT	PAPER NUMBER
2742	

DATE MAILED: 09/29/98

LM61/0929
FINNEGAN HENDERSON FARABOW GARRETT AND DUNNER
1300 I STRET N W
WASHINGTON DC 20005

INTERVIEW SUMMARY

All participants (applicant, applicant's representative, PTO personnel):

(1) J. Romary (3) _____

(2) F. Tsang (4) _____

Date of Interview 9/18/98

Type: ☒ Telephonic ☐ Personal (copy is given to ☐ applicant ☐ applicant's representative).

Exhibit shown or demonstration conducted: ☐ Yes ☒ No If yes, brief description: _____

Agreement ☒ was reached. ☐ was not reached.

Claim(s) discussed: 19

Identification of prior art discussed: _____

Description of the general nature of what was agreed to if an agreement was reached, or any other comments: Claim 19, Line 14, (" the message code " should, obviously be changed to " the response code ". Applicant agreed the above change to put the application into condition for allowance

(A fuller description, if necessary, and a copy of the amendments, if available, which the examiner agreed would render the claims allowable must be attached. Also, where no copy of the amendments which would render the claims allowable is available, a summary thereof must be attached.)

1. ☒ It is not necessary for applicant to provide a separate record of the substance of the interview.

Unless the paragraph above has been checked to indicate to the contrary. A FORMAL WRITTEN RESPONSE TO THE LAST OFFICE ACTION IS NOT WAIVED AND MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a response to the last Office action has are ready been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW.

2. ☐ Since the Examiner's interview summary above (including any attachments) reflects a complete response to each of the objections, rejections and requirements that may be present in the last Office action, and since the claims are now allowable, this completed form is considered to fulfill the response requirements of the last Office action. Applicant is not relieved from providing a separate record of the interview unless box 1 above is also checked.

Examiner Note: You must sign this form unless it is an attachment to another form.

FORM PTOL-413 (REV.1-96)

UNITED STATES DEPARTMENT OF COMMERCE
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Washington, D.C. 20231

APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
08/708,696	09/05/96	PINTER	G 03680 0132

EXAMINER

LM61/0929
FINNEGAN HENDERSON FARABOW GARRETT AND
DUNNER
1300 I STRET N W
WASHINGTON DC 20005

ART UNIT TSANG, F | PAPER NUMBER 8/B

DATE MAILED: 2742

09/29/98

R. Logan 9-23-98

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

NOTICE OF ALLOWABILITY

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance and Issue Fee Due or other appropriate communication will be mailed in due course.

☒ This communication is responsive to amendment A filed 7/24/98.

☒ The allowed claim(s) is/are 1-20 & 22.

☐ The drawings filed on ______ are acceptable.

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) ______.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: ______.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

A SHORTENED STATUTORY PERIOD FOR RESPONSE to comply with the requirements noted below is set to EXPIRE **THREE MONTHS** FROM THE "DATE MAILED" of this Office action. Failure to timely comply will result in ABANDONMENT of this application. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

☐ Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL APPLICATION, PTO-152, which discloses that the oath or declaration is deficient. A SUBSTITUTE OATH OR DECLARATION IS REQUIRED.

☒ Applicant MUST submit NEW FORMAL DRAWINGS

☒ because the originally filed drawings were declared by applicant to be informal.

☐ including changes required by the Notice of Draftperson's Patent Drawing Review, PTO-948, attached hereto or to Paper No. ____

☐ including changes required by the proposed drawing correction filed on ______, which has been approved by the examiner.

☐ including changes required by the attached Examiner's Amendment/Comment.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the reverse side of the drawings. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftperson.

☐ Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Any response to this letter should include, in the upper right hand corner, the APPLICATION NUMBER (SERIES CODE/SERIAL NUMBER). If applicant has received a Notice of Allowance and Issue Fee Due, the ISSUE BATCH NUMBER and DATE of the NOTICE OF ALLOWANCE should also be included.

Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 4

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

☒ Interview Summary, PTO-413

☒ Examiner's Amendment/Comment

☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

☐ Examiner's Statement of Reasons for Allowance

FAN S. TSANG
PRIMARY EXAMINER

PTOL-37 (Rev. 10/95)

* U.S. GPO: 1996-404-496/40507

1. An Examiner's Amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 C.F.R. § 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the Issue Fee.

Claim 19, line 14, "message" (second occurrence) was changed to --response--.

2. Authorization for this Examiner's Amendment was given in a telephone interview with Mr. J. Romary on Sept. 18, 1998.

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fan Tsang whose telephone number is (703)305-4895. The examiner can normally be reached on Monday to Friday from 8.30 AM to 6.00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Krista Zele, can be reached on (703) 305-4701. The fax phone number for this Group is (703) 308-5403.

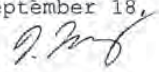
Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [**krista.zele@uspto.gov**].

All Internet e-mail communications will be made of record

in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Fan Tsang
Primary Examiner
Group 2742
September 18, 1998



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

NOTICE OF ALLOWANCE AND ISSUE FEE DUE

LM61/0929
FINNEGAN HENDERSON FARABOW GARRETT AND
DUNNER
1300 I STRET N W
WASHINGTON DC 20005

APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
08/700,696	09/05/96	021	TSANG, F	2742 09/29/98

First Named Applicant: PINTER, GREGORY J.

TITLE OF INVENTION: METHOD AND APPARATUS FOR GENERATING AND COMMUNICATING MESSAGES BETWEEN SUBSCRIBERS TO AN ELECTRONIC MESSAGING NETWORK

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
2 03686.0132	379-089.230	J63	UTILITY	NO	$1320.00	12/29/98

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED.

THE ISSUE FEE MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED.

HOW TO RESPOND TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.
If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is changed, pay twice the amount of the FEE DUE shown above and notify the Patent and Trademark Office of the change in status, or
B. If the status is the same, pay the FEE DUE shown above.

If the SMALL ENTITY is shown as NO:

A. Pay FEE DUE shown above, or

B. File verified statement of Small Entity Status before, or with, payment of 1/2 the FEE DUE shown above.

II. Part B-Issue Fee Transmittal should be completed and returned to the Patent and Trademark Office (PTO) with your ISSUE FEE. Even if the ISSUE FEE has already been paid by charge to deposit account, Part B Issue Fee Transmittal should be completed and returned. If you are charging the ISSUE FEE to your deposit account, section "4b" of Part B-Issue Fee Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give application number and batch number.
Please direct all communications prior to issuance to Box ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PATENT AND TRADEMARK OFFICE COPY

PTOL-85 (REV. 10-96) Approved for use through 06/30/99. (0651-0033)

*U.S. GPO: 1998-437-639/80023

Attorney Docket No. 03680.0132

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	
Gregory J. PINTER	Group Art Unit: 2742
Serial No.: 08/708,696	Examiner: F. Tsang
Filed: September 5, 1996	**Allowed: 09/29/98**
	Batch No. J63

For: METHOD AND APPARATUS FOR GENERATING AND COMMUNICATING MESSAGES BETWEEN SUBSCRIBERS TO AN ELECTRONIC MESSAGING NETWORK

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

SUBMISSION OF FORMAL DRAWINGS

Subject to the approval of the Examiner, please replace the informal drawings with the formal drawings (seven sheets, Figs. 1-8) filed herewith. If the formal drawings for any reason are not in full compliance with the pertinent statutes and regulations, please so advise the undersigned.

If any fees are necessary for the submission of these formal drawings, please charge our Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.

By: _____
John M. Romary
Reg. No. 26,331

December 22, 1998

LAW OFFICES
FINNEGAN, HENDERSON, FARABOW, GARRETT, & DUNNER, L.L.P.
1300 I STREET, N. W.
WASHINGTON, DC 20005
202-408-4000

FIG. 1

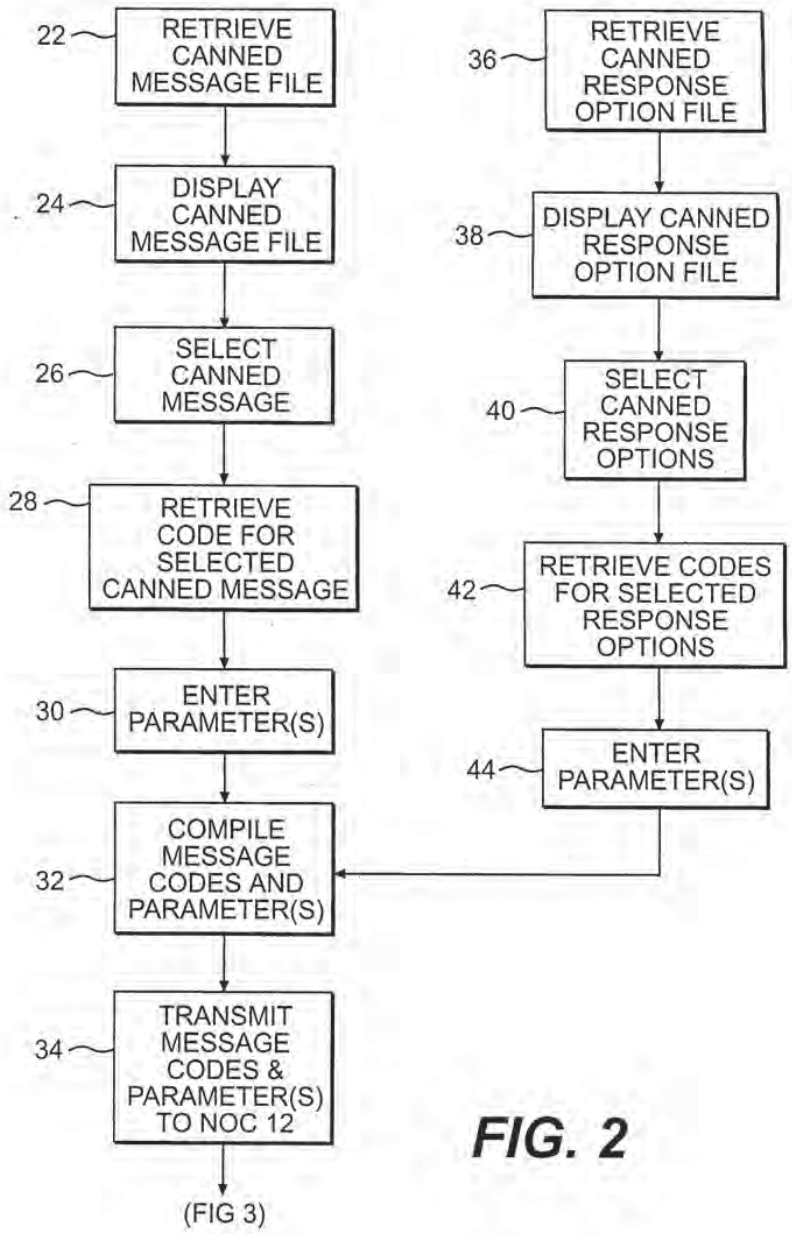


FIG. 2

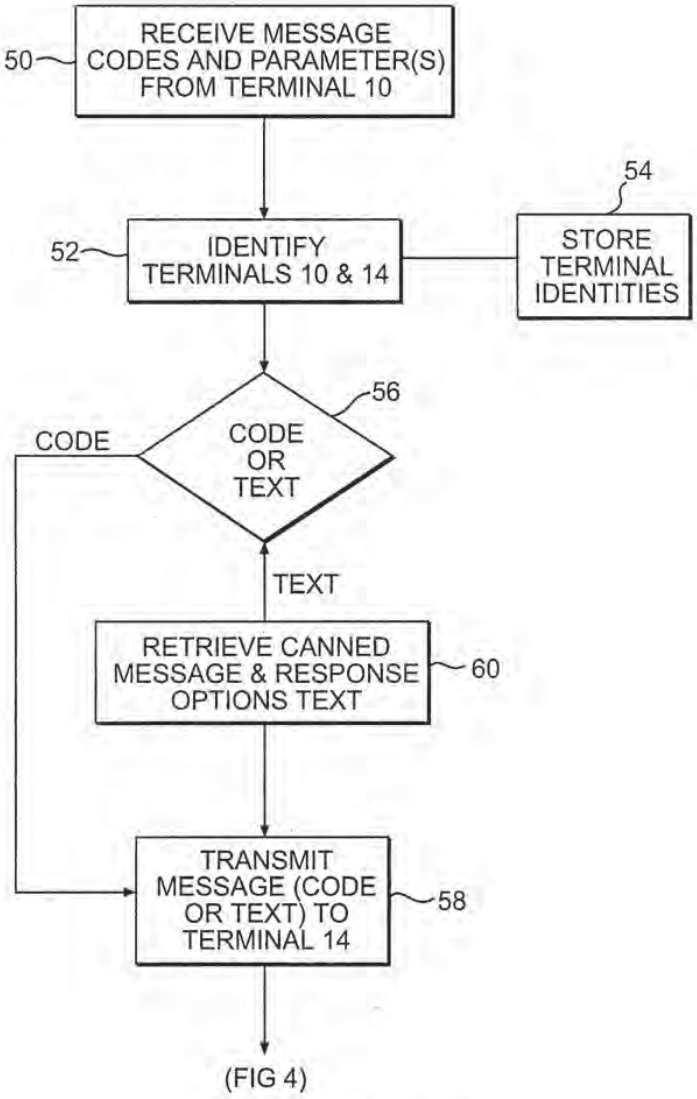


FIG. 3

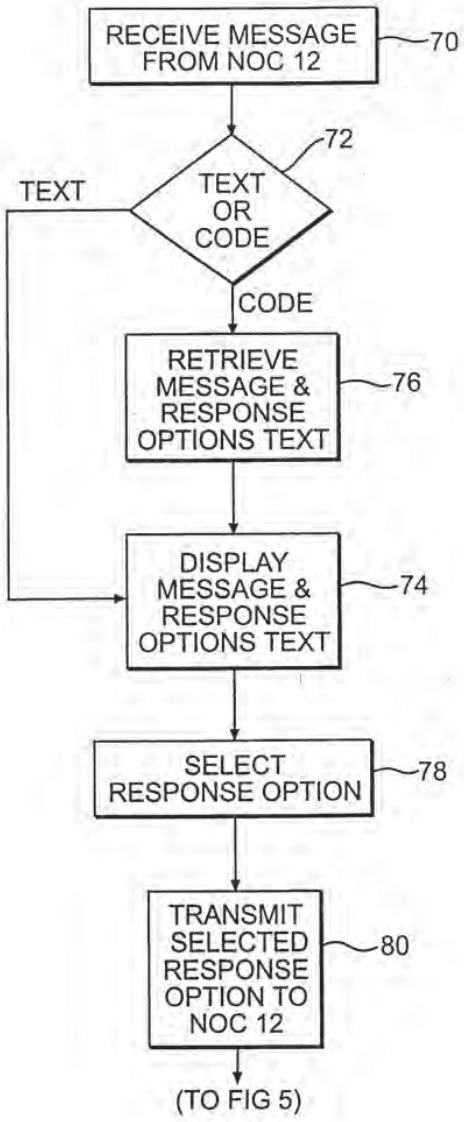


FIG. 4

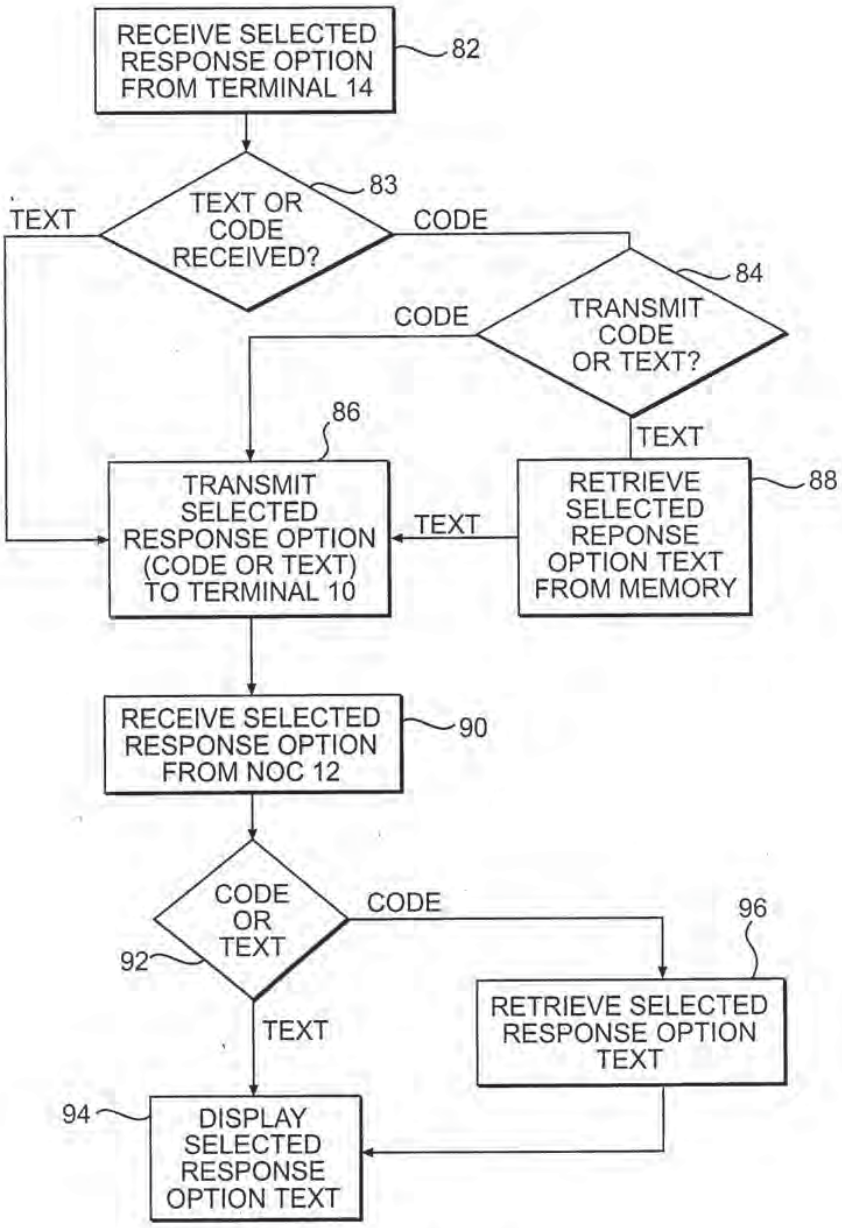


FIG. 5

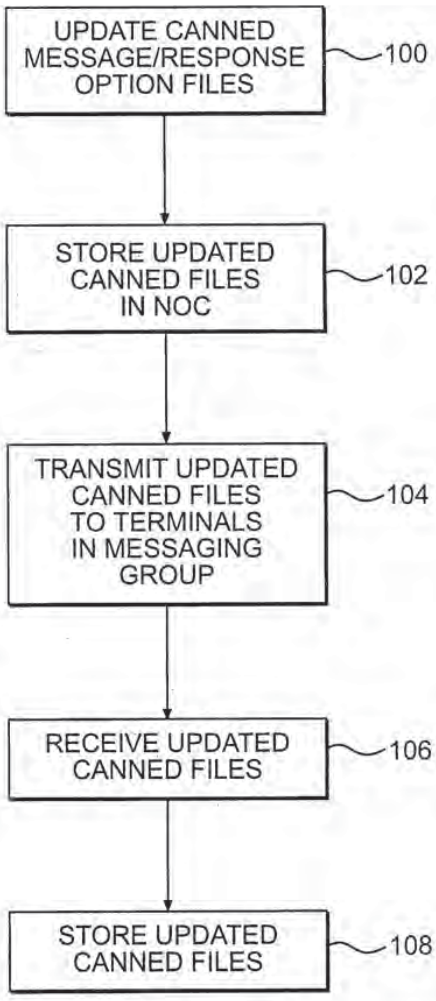


FIG. 6

APPROVED BY DRAFTSMAN	O.G. FIG.	
	CLASS	SUBCLASS

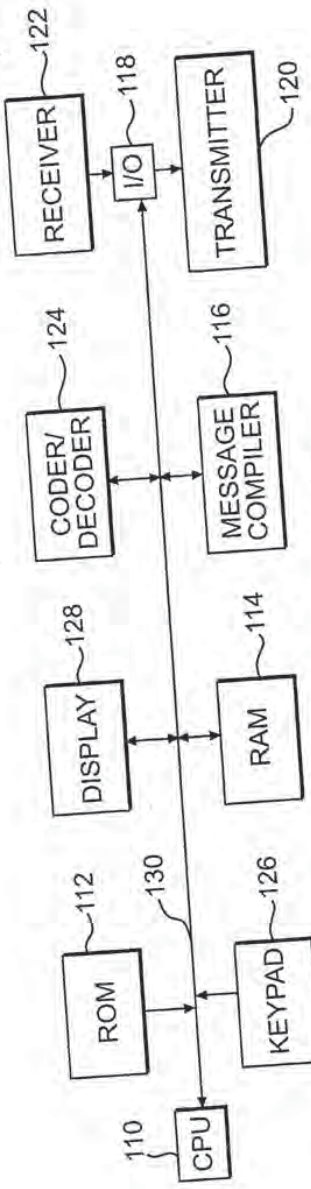


FIG. 7

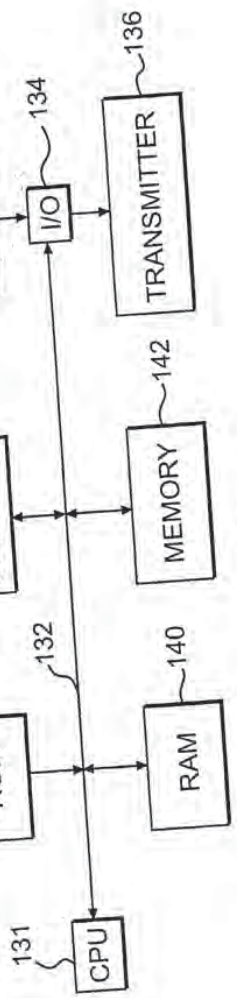


FIG. 8

ma

PART B—ISSUE FEE TRANSMITTAL

142-1210

Complete and mail this form, together with app fees, to: **Box ISSUE FEE**
Assistant Commissioner for Patents
Washington, D.C. 20231

MAILING INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE. Blocks 1 through 4 should be completed where appropriate. All further correspondence including the Issue Fee Receipt, the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Legibly mark-up with any corrections or use Block 1)

LM61/0929
FINNEGAN HENDERSON FARABOW GARRETT AND DUNNER
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WASHINGTON DC 20005

OIPE JC60 DEC 23 1998 PATENT & TRADEMARK OFFICE

Note: The certificate of mailing below can only be used for domestic mailings of the Issue Fee Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing.

Certificate of Mailing

I hereby certify that this Issue Fee Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Box Issue Fee address above on the date indicated below.

(Depositor's name)

(Signature)

(Date)

APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
08/708,696	09/05/96	021	TSANG, F	2742 09/29/98

First Named Applicant: PINTER, GREGORY J.

TITLE OF INVENTION: METHOD AND APPARATUS FOR GENERATING AND COMMUNICATING MESSAGES BETWEEN SUBSCRIBERS TO AN ELECTRONIC MESSAGING NETWORK

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
[illegible]	[illegible]	[illegible]	[illegible]	NO	$1320.00	12/29/98

1. Change of correspondence address or indication of " Fee Address" (37 CFR 1.363). Use of PTO form(s) and Customer Number are recommended, but not required.

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

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47) attached.

2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Finnegan, Henderson,
2 Farabow, Garrett
& Dunner, L.L.P.
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type).
PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the PTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE SkyTel Communications, Inc.

(B) RESIDENCE: (CITY & STATE OR COUNTRY) Jackson, Mississippi

Please check the appropriate assignee category indicated below (will not be printed on the patent)

☐ Individual ☒ corporation or other private group entity ☐ government

4a. The following fees are enclosed (make check payable to Commissioner of Patents and Trademarks):

☒ Issue Fee

☐ Advance Order - # of Copies _____

4b. The following fees or deficiency in these fees should be charged to:

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☐ Advance Order - # of Copies _____

The COMMISSIONER OF PATENTS AND TRADEMARKS IS requested to apply the Issue Fee to the application identified above.

(Authorized Signature) John M. Romary, Reg. No. 26,331

(Date) 22Dec98

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01 FC:142 1210.00 OP

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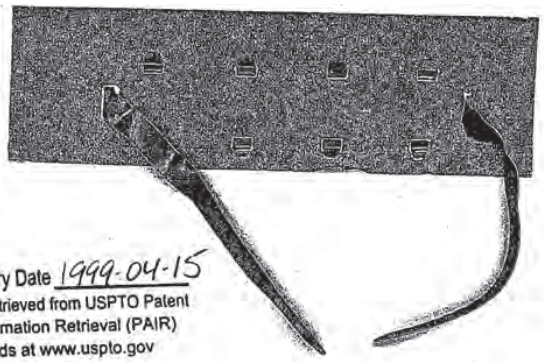

Transaction History Date 1999-04-15
Date information retrieved from USPTO Patent Application Information Retrieval (PAIR) system records at www.uspto.gov

PTO UTILITY GRANT
Paper Number 8

The United States of America

The Commissioner of Patents and Trademarks

Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America for the term set forth below, subject to the payment of maintenance fees as provided by law.

If this application was filed prior to June 8, 1995, the term of this patent is the longer of seventeen years from the date of grant of this patent or twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.

If this application was filed on or after June 8, 1995, the term of this patent is twenty years from the U.S. filing date, subject to an statutory extension. If the application contains a specific reference to an earlier filed application or applications under 35 U.S.C. 120, 121 or 365(c), the term of the patent is twenty years from the date on which the earliest application was filed, subject to any statutory extension.

Bruce Lehman
Commissioner of Patents and Trademarks

Attest Mary L. Lee

Form PTO-1584 (Rev. 2/97)

FPI-LOM

(RIGHT INSIDE)

5 of 5

Attorney Docket No. 03680.0132

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re U.S. Patent No.: 5,894,506)
)
Inventor: Gregory J. Pinter)
)
Issue Date: April 13, 1999)

M.W. #9

For: METHOD AND APPARATUS FOR GENERATING AND COMMUNICATING MESSAGES BETWEEN SUBSCRIBERS TO AN ELECTRONIC MESSAGING NETWORK

Certificate of Correction Branch

APPROVED
AUG 13 1999
FOR THE COMMISSIONER OF PATENTS & TRADEMARKS

CERTIFICATE
MAY 24 1999
OF CORRECTION

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

REQUEST FOR CERTIFICATE OF CORRECTION

Pursuant to 35 U.S.C. § 254 and 37 C.F.R. § 1.322, this is a request for the issuance of a Certificate of Correction in the above-identified patent. Two (2) copies of PTO Form 1050 are appended. The complete Certificate of Correction involves one page.

The mistake identified in the appended Form occurred through the fault of the Office, as clearly disclosed by the records of the application which matured into this patent.

Issuance of the Certificate of Correction containing the correction is earnestly requested.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.

By: _____
John M. Romary
Reg. No. 26,331

Dated: May 14, 1999

LAW OFFICES
FINNEGAN, HENDERSON, FARABOW, GARRETT, & DUNNER, L.L.P.
1300 I STREET, N. W.
WASHINGTON, DC 20005
202-408-4000

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO.: 5,894,506

DATED: April 13, 1999

INVENTOR: Gregory J. Pinter

It is certified that an error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Claim 5, column 9, line 34, after "work" insert --operation center;-- then start a new indented line beginning with "routing".

Mailing Address of Sender:

Finnegan, Henderson, Farabow
Garrett & Dunner, L.L.P.
1300 I Street, N.W.
Washington, DC 20005-3315

FORM PTO 1050 (Rev.2-93)

PATENT NO. 5,894,506

No. of add'l copies
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Patent and Trademark Office
ASSISTANT SECRETARY AND COMMISSIONER
OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

CHANGE OF ADDRESS/POWER OF ATTORNEY

FILE LOCATION 9200 SERIAL NUMBER 08708696 PATENT NUMBER 5894506

THE CORRESPONDENCE ADDRESS HAS BEEN CHANGED TO CUSTOMER # 25537

THE PRACTITIONERS OF RECORD HAVE BEEN CHANGED TO CUSTOMER # 25537

THE FEE ADDRESS HAS BEEN CHANGED TO CUSTOMER # 25537

ON 11/21/00 THE ADDRESS OF RECORD FOR CUSTOMER NUMBER 25537 IS:

WORLDCOM, INC
TECHNOLOGY LAW DEPARTMENT
1133 19TH ST, NW
WASHINGTON DC 20036

AND THE PRACTITIONERS OF RECORD FOR CUSTOMER NUMBER 25537 ARE:

34958 40289 41467 42408 42761 43792

PTO INSTRUCTIONS: PLEASE TAKE THE FOLLOWING ACTION WHEN THE CORRESPONDENCE ADDRESS HAS BEEN CHANGED TO CUSTOMER NUMBER: RECORD, ON THE NEXT AVAILABLE CONTENTS LINE OF THE FILE JACKET, 'ADDRESS CHANGE TO CUSTOMER NUMBER'. LINE THROUGH THE OLD ADDRESS ON THE FILE JACKET LABEL AND ENTER ONLY THE 'CUSTOMER NUMBER' AS THE NEW ADDRESS. FILE THIS LETTER IN THE FILE JACKET. WHEN ABOVE CHANGES ARE ONLY TO FEE ADDRESS AND/OR PRACTITIONERS OF RECORD, FILE LETTER IN THE FILE JACKET.
THIS FILE IS ASSIGNED TO GAU 2742.

PTO-FMD
TALBOT-1/97

Form PTO 1130
(REV 2/94)

PACE DATA ENTRY CODING SHEET

U.S. DEPARTMENT OF COMMERCE
Patent and Trademark Office

1ST EXAMINER 414 DATE 10-29-96

2ND EXAMINER DATE

APPLICATION NUMBER	TYPE APPL	FILING DATE (MONTH DAY YEAR)	SPECIAL HANDLING	GROUP ART UNIT	CLASS	SHEETS OF DRAWING
08/708696	1	09 05 96	0	2603	370	7

TOTAL CLAIMS	INDEPENDENT CLAIMS	SMALL ENTITY?	FILING FEE	FOREIGN LICENSE	ATTORNEY DOCKET NUMBER
21	4	0	850	Y	036801.0132

CONTINUITY DATA

CONT CODE	STATUS CODE	PARENT APPLICATION SERIAL NUMBER	PCT APPLICATION SERIAL NUMBER	PARENT PATENT NUMBER	PARENT FILING DATE (MONTH DAY YEAR)
			PCT/ /		
			PCT/ /		
			PCT/ /		
			PCT/ /		
			PCT/ /		

PCT/FOREIGN APPLICATION DATA

FOREIGN PRIORITY CLAIMED	COUNTRY CODE	PCT/FOREIGN APPLICATION SERIAL NUMBER	FOREIGN FILING DATE (MONTH DAY YEAR)

PATENT APPLICATION FEE DETERMINATION RECORD

Effective October 1, 1995

Application or Docket Number: 708696

CLAIMS AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE	SMALL ENTITY FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY FEE
BASIC FEE				375.00	OR		750.00
TOTAL CLAIMS	21 minus 20 =	* 1	x$11=		OR	x$22=	22
INDEPENDENT CLAIMS	4 minus 3 =	* 1	x39=		OR	x78=	78
MULTIPLE DEPENDENT CLAIM PRESENT			+125=		OR	+250=	
			TOTAL		OR	TOTAL	850

* If the difference in column 1 is less than zero, enter "0" in column 2

CLAIMS AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE	SMALL ENTITY ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY ADDITIONAL FEE
AMENDMENT A	Total	* 21	Minus	**21	=	x$11=		OR	x$22=	
	Independent	* 5	Minus	*** 4	= 1	x39=		OR	~~x78=~~ 82	82
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM					+125=		OR	+250=	
						TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE	SMALL ENTITY ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY ADDITIONAL FEE
AMENDMENT B	Total	*	Minus	**	=	x$11=		OR	x$22=	
	Independent	*	Minus	***	=	x39=		OR	x78=	
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM					+125=		OR	+250=	
						TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE	SMALL ENTITY ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY ADDITIONAL FEE
AMENDMENT C	Total	*	Minus	**	=	x$11=		OR	x$22=	
	Independent	*	Minus	***	=	x39=		OR	x78=	
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM					+125=		OR	+250=	
						TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

FORM PTO-875
(Rev. 10/95)

Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

Thomson Innovation Patent Export, 2013-06-13 09:37:06 -0500

Table of Contents

Family 1/1

1 record(s) per family

Record 1/1 US5894506A Method and apparatus for generating and communicating messages between subscribers to an electronic messaging network

Publication Number: US5894506A 19990413

Title: Method and apparatus for generating and communicating messages between subscribers to an electronic messaging network

Title - DWPI: Message generation and communication method between subscribers of electronic messaging network

Priority Number: US1996708696A

Priority Date: 1996-09-05

Application Number: US1996708696A

Application Date: 1996-09-05

Publication Date: 1999-04-13

IPC Class Table:

IPC	Section	Class	Subclass	Class Group	Subgroup
H04L001258	H	H04	H04L	H04L0012	H04L001258
H04M0003533	H	H04	H04M	H04M0003	H04M0003533
H04M001102	H	H04	H04M	H04M0011	H04M001102
H04M000353	H	H04	H04M	H04M0003	H04M000353

IPC Class Table - DWPI:

IPC - DWPI	Section - DWPI	Class - DWPI	Subclass - DWPI	Class Group - DWPI	Subgroup - DWPI
H04M000164	H	H04	H04M	H04M0001	H04M000164

Assignee/Applicant: SkyTel Communications Inc.,Jackson,MS,US

JP F Terms:

JP FI Codes:

Assignee - Original: SkyTel Communications Inc.

Any CPC Table:

Type	Invention	Additional	Version	Office
Current	H04L 12/5835	H04M 3/5322	20130101	EP
Current	H04L 51/066	H04M 2203/4581	20130101	EP
Current	H04M 3/53316		20130101	EP
Current	H04M 11/022		20130101	EP

ECLA: H04L001258C2 | H04L005106B | H04M0003533D | H04M001102A | T04M000353T | T04M020345I

Abstract:

An electronic messaging network comprises a network operation center and plural message terminals, all including memories for storing corresponding files of canned messages and associated message codes. To send a canned message, a calling party selects a canned message stored at one message terminal and transmits the assigned message code to a receiving party at another message terminal via the network operation center. The receiving terminal retrieves the selected canned message from its memory using the received message code for display to the receiving party. Files of canned responses and associated response codes may also be stored in the memories at the terminals and network operation center to allow the exchange of selected canned response options in conjunction with canned messages to be in response code form.

Language of Publication: EN

INPADOC Legal Status Table:

Gazette Date	Code	INPADOC Legal Status Impact
2010-10-13	FPAY	+
Description: FEE PAYMENT		
2007-03-14	AS	-
Description: ASSIGNMENT NEWCASTLE PARTNERS, L.P., TEXAS SECURITY AGREEMENT; ASSIGNORS:BELL INDUSTRIES, INC.; BELL INDUSTRIES, INC.; REEL/FRAME:019009/0529 2007-03-12		
2007-01-31	AS	-
Description: ASSIGNMENT WELLS FARGO FOOTHILL, INC., AS AGENT, CALIFORNIA PATENT SECURITY AGREEMENT; ASSIGNORS:BELL INDUSTRIES, INC., A CALIFORNIA CORPORATION; BELL INDUSTRIES, INC., A MINNESOTA CORPORATION; REEL/FRAME:018826/0503 2007-01-31		
2007-01-24	AS	-

Description: ASSIGNMENT SKYTEL CORP., VIRGINIA MERGER; ASSIGNOR:SKYTEL COMMUNICATIONS, INC.; REEL/FRAME:018797/0318 2004-12-31		
2006-10-13	FPAY	+
Description: FEE PAYMENT		
2002-10-30	REMI	-
Description: MAINTENANCE FEE REMINDER MAILED		
2002-10-11	FPAY	+
Description: FEE PAYMENT		
1999-09-14	CC	-
Description: CERTIFICATE OF CORRECTION		
1998-12-22	AS	-
Description: ASSIGNMENT SKYTEL COMMUNICATIONS, INC., MISSISSIPPI ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:MOBILE TELECOMMUNICATION TECHNOLOGIES (NTEL); REEL/FRAME:009657/0936 1998-12-14		
1996-09-05	AS	-
Description: ASSIGNMENT MOBILE TELECOMMUNICATION TECHNOLOGIES, MISSISSIPPI ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:PINTER, GREGORY J.; REEL/FRAME:008218/0879 1996-07-16		

Post-Issuance (US): CORR-CERT Certificate of Correction 1999-09-14 1999 a Certificate of Correction was issued for this patent

Reassignment (US) Table:

Assignee	Assignor	Date Signed	Reel/Frame	Date
NEWCASTLE PARTNERS L.P.,DALLAS,TX,US	BELL INDUSTRIES, INC.	2007-03-12	019009/0529	2007-03-14
	BELL INDUSTRIES, INC.	2007-03-12		
Conveyance: SECURITY AGREEMENT				
Corresponent: RANDY M. FRIEDBERG, ESQ. OLSHAN GRUNDMAN FROME ROSENSZWEIG ET AL PARK AVENUE TOWER 65 EAST 55TH STREET NEW YORK, NY 10022				
WELLS FARGO FOOTHILL INC. AS AGENT,SANTA	BELL INDUSTRIES, INC., A CALIFORNIA	2007-01-31	018826/0503	2007-01-31

MONICA,CA,US	CORPORATION			
	BELL INDUSTRIES, INC., A MINNESOTA CORPORATION	2007-01-31		
Conveyance: PATENT SECURITY AGREEMENT				
Corresponent: PAUL HASTINGS JANOFSKY & WALKER LLP 515 SOUTH FLOWER STREET, 25TH FLOOR LOS ANGELES, CA 90071				
SKYTEL CORP.,ASHBURN,VA,US	SKYTEL COMMUNICATIONS, INC.	2004-12-31	018797/0318	2007-01-24
Conveyance: MERGER (SEE DOCUMENT FOR DETAILS).				
Corresponent: EDEN STRIGHT 1515 COURTHOUSE ROAD, SUITE 500 ARLINGTON, VA 22201-2909				
SKYTEL COMMUNICATIONS INC.,JACKSON,MS,US	MOBILE TELECOMMUNICATION TECHNOLOGIES (NTEL)	1998-12-14	009657/0936	1998-12-22
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).				
Corresponent: FINNEGAN, HENDERSON, FARABOW ETAL. JOHN M. ROMARY 1300 I STREET, N.W. WASHINGTON, DC 20005-3315				
MOBILE TELECOMMUNICATION TECHNOLOGIES,JACKSON, MS,US	PINTER, GREGORY J.	1996-07-16	008218/0879	1996-09-05
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).				
Corresponent: FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P. ROBERT A. CAHILL 1300 I STREET, N.W. WASHINGTON, D.C. 20005-3315				

Maintenance Status (US): CC

Litigation (US): 2012-05-29 2012 Mobile Telecommunications Technbologies, LLC Research in Motion Corporation N.D. Texas 3:12cv01652 | 2013-04-02 2013 Mobile Telecommunications Technologies, LLC Apple, Inc. E.D. Texas 2:13cv00258 | 2013-04-02 2013 MobileTelecommunications Technologies, LLC Samsung Telecommunications America, LLC E.D. Texas 2:13cv00259

Opposition (EP):

License (EP):

EPO Procedural Status:

Front Page Drawing:

USPTO Maintenance Report

Patent Bibliographic Data					06/13/2013 10:55 AM
Patent Number:	5894506		Application Number:	08708696	
Issue Date:	04/13/1999		Filing Date:	09/05/1996	
Title:	METHOD AND APPARATUS FOR GENERATING AND COMMUNICATING MESSAGES BETWEEN SUBSCRIBERS TO AN ELECTRONIC MESSAGING NETWORK				
Status:	4th, 8th and 12th year fees paid			Entity:	LARGE
Window Opens:	N/A	Surcharge Date:	N/A	Expiration:	N/A
Fee Amt Due:	Window not open	Surchg Amt Due:	Window not open	Total Amt Due:	Window not open
Fee Code:					
Surcharge Fee Code:					
Most recent events (up to 7):	10/13/2010 10/13/2006 11/26/2002 11/26/2002 10/30/2002 10/11/2002	Payment of Maintenance Fee, 12th Year, Large Entity. Payment of Maintenance Fee, 8th Year, Large Entity. Payor Number Assigned. Payer Number De-assigned. Maintenance Fee Reminder Mailed. Payment of Maintenance Fee, 4th Year, Large Entity. --- End of Maintenance History ---			
Address for fee purposes:	COMPUTER PACKAGES, INC. 414 HUNGERFORD DRIVE ROCKVILLE MD 20850				